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PROBLEMS OF OBSTETRICAL PRACTICE*

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PARTURITION is a physiological process, identical in the countess and in the cow. At least, until recently, it has been so regarded. Physiological the process is, and yet as regards the countess—and every mother is a countess—this natural process still remains a hazardous occupation. The price of motherhood is still "cruel high": ask any insurance company.

If it is important to be in the world at all, the matter of this entrance, and the price of this admission, are surely of first consideration. And yet, oddly enough, as compared with the sister subjects of medicine and surgery, obstetrics has rather been, not a first, but a last consideration, and it still runs against these a bad third in the race. You will remember that clinical instruction in obstetrics was inaugurated in this country by Dr. James P. White, of Buffalo, as late as the year 1850; so that, in all truth it may be said that adequate training in this important subject indeed got away to a bad start.

Dr. Thomas Watts Eden, of London, in a recent address on "The Maternal Mortality of Child-Bearing," informs us that the average mortality-rate in Great Britain is still about five in every thousand births; and that during the past ten years, this mortality-rate has remained about stationary, showing little or no improvement. The worst of this showing is that only half of these maternal deaths were due to hæmorrhage, and the accidents of childbirth; whereas a second half was due entirely to sepsis. In the registration area of the United States, which represents but two-thirds of the total area of the country, 11,500 women die annually in child-bed, a showing but little better than that in the United Kingdom, while even in this newer and wider country, a full half of these deaths are again due to sepsis.

At first sight, five maternal deaths for every thousand births may not seem a too-unreasonable price to pay; but when we compare this number with the total death rate of some fifteen per thousand of the population, this maternal mortality is at once recognized as, beyond all question, criminal and exorbitant. Put in this way, the case stands strongly against us, inasmuch as these mothers pay a full third of the total price—the mother in the prime of life, the most valuable citizen in the community—dying often from a preventable disease.

The causes of this high maternal death-rate are not "still to seek." George M. Boyd, of Philadelphia, recently tells us that nine-tenths of all mothers in America receive no pre-natal care; that 40% of the women of the United States are attended by midwives or unqualified physicians; that the general mortality in childbirth is second only to that from tuberculosis, in women of this age, and that nearly half of these deaths are due to sepsis. In Great Britain there is the same story, for, despite the pioneer work of the late J. W. Ballantyne, of Edinburgh, ante-natal care is still in its infancy, and more than half the mothers are still delivered by the midwife. Now, these are the facts, and

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assuredly they carry their own condemnation, declaring in no uncertain terms our national indifference and neglect. For in this way, the expectant mother is left more or less to shift for herself, at the very time when her need is greatest. So left to herself in this great maternal service, one mother in every two hundred comes to make the supreme sacrifice.

As I have said, obstetrics got away to a slow start, and there is still far too much truth in the opprobrium from the general surgeon, that it is safer for the woman in this country to have her abdomen opened for any chronic condition than it is to bear a child. And yet, in all conscience and common sense, obstetrics should run first in this race. Medical science and medical skill should be concentrated here, at the gateway of life, and concern themselves first with what may be called this world-immigration. It *is* of the first importance to be in the world, and well in the world.

It is always essential for us to remember that in 90% of all cases, the labour is spontaneous, and that a vast proportion of these mothers must always be delivered in their own homes. These women cannot come to us in our hospitals and training-schools, but, on the other hand, we of these schools must go to them. We must send to them the well-trained doctor and the nurse, and provide in the home a well-adapted and an efficient technique. So, in a practical, life saving way, we must go to them. This is but another way of saying that we must raise the general standard of our training, must furnish men more thoroughly equipped, and then must devise the ways and means whereby these higher standards may be enforced.

This, in the highest sense, is a missionary service, and a missionary service to the rich and poor alike. Much of it rightly belongs to the Department of Public Health. For the benefit of the poor, maternity centres must be provided, and the doctor and nurse be paid at least a living wage. We are told that to-morrow we die, and it is equally true that we only live again, in this world, in the coming generation; so what is to be said of a Federal Government that spends each year millions of dollars on its agriculture and only the corresponding thousands on its public health. Even in this very city of New York, the largest and richest in America, your Maternity Centre Association lives as yet solely upon charity, and is carrying on this work of maternal welfare until, in the words of Miss Anne A. Stevens, "such time as a demonstration can be made so convincing as to assure for it an adequate appropriation of public money." I say that maternity centres, wherever they are needed must be created, and their physicians and their nurses must be adequately paid.

The cost of such a maternity centre, properly manned and equipped, is not so great after all, even though in a national sense, it is such an important proposition. At the Maternity Hospital Centre in Montreal, Dr. J. W. Duncan, the physician in charge, tells me that the actual cost of the home delivery, per child, was last year nine dollars and fifty-one cents. At the same time, the amount collected from the mothers averaged six dollars and seventy-two cents, thus leaving a debit balance of two dollars and seventy-nine cents, as the monetary loss to the centre, for each child. Overhead charges were, of course, not included here, and the skilled obstetrical service was purely voluntary.

Everyone will admit that the child is our greatest national asset. Irving Fisher tells us that each one of these new-born is worth, in potential earning power, some ninety dollars to its community; so that, even with maternity centres, and with all salaries and all charges paid, the transaction still remains a richly-paying proposition. And all this is not Utopian; it could easily be applied both to our urban and to our rural districts, and it is strictly business, and good business if it comes to that.

Our own immediate share in the transaction —the share of our hospitals and our training-schools—is, as I have said, to provide the men. These men must have a sound general knowledge of medicine, and a special training for this work. And this training must be made broad, practical, and sufficient, if we are to ensure a general improvement in our obstetric art.

Now, if our obstetric practice is to advance at all, it must be along the lines of preventive medicine; and this progress we may define in the following terms: (1) A definite antenatal care; (2) A hospital segregation of the complicated cases; (3) A simple, efficient technique during labour; (4) A post-natal care.

These, I take it, must be the main lines of our advance, and although it all sounds so simple, it really means that the obstetrician must be a master of his subject.

(1) *A Definite Ante-natal Care*—Such care demands both a general and a special knowledge, and means much more than mere pelvic measurements, and a periodic examination of the urine. It must include a general examination of the patient early in her pregnancy, a careful ante-natal supervision, and a thorough knowledge of the pathology of the pregnant state. There follows then the special examination of the mother and the child at the 30th week, when this child is viable; and the early recognition of the complications which may beset them both. There must also be included a good working knowledge of general hygiene and of public health. Here, as elsewhere, it is "woe unto the specialist who is not also a fair generalist."

(2) *A Hospital Segregation of the Complicated Cases.*—Though I am no special optimist, I believe that these hospitals will, in time—not in eternity—be provided. In the cities and the older countries, the problem is an easy one, but it becomes possible with our modern transport, even in the newer countries, and with a scattered population. In these hospitals, so far as may be, the various complications, such as the probable dystocias, the toxæmias, cases of ante-natal hæmorrhage, and puerperal sepsis. (when it does occur) are to be segregated and all the advantages of a hospital service made available in their treatment. Very fortunately for us all, these obstetrical complications, where there is adequate ante-natal supervision, give abundant warning of their presence; the sudden, unannounced emergencies are very few, and the good obstetrician is thrice-armed, in that he is fore-warned of the event.

(3) *A Simple, Efficient Technique during Labour.*—The prevention of infection is the most urgent problem in obstetrics: it is far more important than operative skill, where 90% of the labours are spontaneous. As we have seen, puerperal sepsis is responsible for as many maternal deaths as are all the other complications put together; accordingly, the first and the most important part of our training is to prevent this sepsis, to furnish the young obstetrician with a good technique. This technique must be simple, must be adequate, and, among the poor, inexpensive; adaptable it must be, and everywhere consistent. Eden happily designates such a simple technique as the "irreducible minimum," and rightly contends that our hospitals should teach in this regard, not only by precept but also by example. One of the dangers of a hospital technique is that it tends to become too elaborate, and too far-removed from the possibilities of private practice.

In our maternity centres in Montreal, this "irreducible minimum" can be expressed in the following concrete terms. There are to be two night-gowns, four sheets, four pillow-slips, four towels, freshly laundered, and provided, where possible, by the patient. The obstetrical kit from the maternity centre includes the following sterilized equipment:—a gown and rubber gloves, patient's leggings and vulvar pads, cord and eye dressings, and a few necessary instruments; to these are added two rubber sheets, a douche can, and two granite-ware basins; lysol, biniodide of mercury, and tincture of iodine are the only antiseptics. Now, with these things, a cake of fresh soap, and boiled water, an irreproachable technique can be attained. All the rest depends upon the personal equation, and the correct application of these simple equivalents.

As regards obstetrical procedure, the one important rule is that the parturient vagina should be entered with the same respect as the peritoneal cavity. Abdominal palpation will reveal, not only the presentation, but also the position of the child; the dilatation of the cervix may be learned per rectum, and the heart-rate truthfully indicates the condition of the child. A vaginal examination should only be made for good and sufficient reasons, and with the greatest observance of respect.

This rule also carries with it the definite obligation of operative restraint. The ideal delivery is, and must always be, the one that is spontaneous; for, when all is said and done, it is the safe delivery, and in consequence, the ideal to aim at. In a given series of cases it can be shown that the morbidity rate is increased, comes to read as 7 to 4, by an operative interference: and this fact finds its best illustration perhaps in comparing the exhibition of half a cc. of pituitary extract with delivery by low forceps.

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(4) *A Post-natal Care.*—Even as ante-natal care is preventive obstetrics, so the post-natal care may be described as preventive gynecology. The puerperium is an important phase in the gestation-cycle, and the involution of the genitalia is a definite process to be carefully safeguarded. At least one post-natal examination must be made, preferably at the 4th week; any trauma, disability, or sub-involution are to be noted, and prompt measures taken for their relief. It goes without saying that operative measures are to be postponed, if possible, till a lactation-term is accomplished. In this way we see to it that the genital tract is speedily restored to health, and we ensure for the woman a freedom from future suffering and disablement.

This, then, is the general problem of our obstetrical practice, and it is the first and the most urgent problem that confronts us. It is always a wise thing to begin at the beginning, and the true solution of this problem is to improve the general standard of our teaching, and so to provide both men and women who will be efficient in this work. In all obstetric practice there are the two outstanding requisites: the one, the "masterful inactivity" of the well-trained and capable man: and the other is the universal employment of a good technique. It of course goes without saying that in this attitude of "inactivity," the obstetrician must always be a master of the situation; and so it is that a sound surgical training is essential, and, added to this, a sufficient skill and experience.

Accordingly, our hospital training should be conducted along these lines, and should not become in any way distracted from the actual needs of the situation.

And yet there is a tendency, I confess, to such distraction. Brilliant surgical interference rather tends to captivate us, and to divert, or even to misdirect, our main attention. The induction of labour in normal cases, and the obliteration of the second stage by version or prophylactic forceps, do not herald an obstetrical millenium, even though they may be performed by any dextrous surgeon. They are at first sight spectacular and dramatic, and therein is their danger, for they are not safe for general application. In a sense, they provide for the woman a vicarious labour, inasmuch as the obstetrician takes upon himself the main delivery. In very truth, it may be said "he labours" for her. No, this may be brilliant, but it is not safe obstetrics, and disastrous indeed, would be the result if these procedures were generally employed.

I shall now consider four special problems in obstetrical practice, merely enunciating here the general teaching which we adopt. The methods that I advocate are for the most part old and well-tried, for they stand us still in good stead. They are, moreover, safe teaching methods, and they may be applied, both in the hospitals and in private practice.

These four problems are the following: (1) the occipito-posterior position; (2) eclampsia; (3) placenta prævia; (4) puerperal infection.

1.—*The Occipito-posterior position.*

Some idea of the frequency of this position may be gathered from the following figures. Last year, in the Montreal Maternity Hospital, there were 1230 confinements, and in 51 of these, the occiput was in the posterior position. Oddly enough, the number of the right and left positions was practically equal, for there were 26 of the one and 25 of the other. In these 51 cases, there were 22, or nearly half the number, in which the labour was spontaneous. Of these spontaneous cases, in 8 good flexion was preserved, and the occiput underwent the long, forward rotation, while in 14 there was loss of flexion, the occiput remained posterior, and the delivery was a face to pubes.

The remaining 29 required assistance. This took the form of a manual rotation of the head, followed by low forceps in 13 cases. Here the rotation was brought about by flexing the head by pressure upon the sinciput during a pain, and a manual rotation, the forceps only being applied when this rotation was complete. In 15 cases, this manual rotation failed, and mid forceps were required. In these, the blades were applied laterally to the head, and simply by downward pull the occiput undertook of itself the rotation forward. A second application of the blades was necessary after this rotation had occurred, to deliver finally the head. In 14 of these cases, the occiput led in the rotation, and the forceps' blades were simply allowed to follow in this movement. In only one case was a definite Scanzoni, that is, an

induction of the rotation by the blades themselves, found necessary.

A median episiotomy was done in all the face to pubes cases, and in but two of these was the spincter ani muscle torn through. In them all, repair was satisfactory; in only one case was the puerperium morbid, while there was no mortality among the children.

Now, in all fairness, these results are satisfactory, albeit the methods pursued represent a minimum of interference. Though it is possible, in many instances, to identify these posterior positions by external palpation, before, or at the beginning of labour, it is probably safer to leave them alone. A version is scarcely necessary, save there be some pelvic contraction; and the same may be said of Buist's external rotation of the anterior shoulder, or the internal rotation of this same shoulder by the excellent manoeuvre of Pomeroy.

2.—*Eclampsia.*

This eclamptic condition will rarely develop if there be adequate pre-natal care. It can largely be checked by starvation, as witness the results in the Great War. Now and then, however, we meet the fulminating case—the convulsion is like a bolt from the blue—and there are many cases where there has been little or no supervision.

Last year we had 14 such cases of eclampsia, and in only one of these did the mother succumb, and this from a broncho-pneumonia on the 17th day after her delivery. In 7 cases the labour was spontaneous, in one the patient was admitted post-partum, and in the remaining 6, the labour was later induced by the Champetier de Ribes', or the Vorhees bag. In none of these cases was a Cæsarean section undertaken. Six of the children were premature, and of the full-time children 4 were dead-born. In all, 8 children survived and two of these were twins.

I believe it is wise in these cases to treat the eclamptic condition, leaving the labour to care for itself. In my judgment, the definite routine of immediate delivery is a great mistake. Rather shall we first treat the actual eclamptic condition, and in the following way.

There is no doubt whatever that convulsions kill, and in consequence these must be controlled by a free use of morphia. One-quarter of a gr. is first given hypodermically, and this is repeated, if necessary. If possible, a specimen of urine is secured, to verify the diagnosis in the emergency case. A venesection is done, and sufficient blood removed to reduce the blood pressure to a normal reading, say 130. The stomach is washed out with a solution of bicarbonate of soda, and one oz. of magnesium sulphate, in a saturated solution, is left in the stomach; the rectum is emptied, and this is followed by high-colon lavage, with the same alkaline solution. Hot packs were not employed, though the Burdick's electric bath was used in several of the cases.

Under this treatment the condition of these 14 patients gradually improved; consciousness was regained, the fits ceased, and the flow of urine was re-established. Forced fluids were administered by mouth, and per rectum; and in 3 of the most severe cases, 10 oz. of a normal glucose solution was given intravenously for three days. All these patients recovered, save the one who died later of broncho-pneumonia. This recovery was always gradual, a matter of days in each case, and it was denoted by a controlled blood-pressure, a steadily clearing consciousness, an increased output of urine, and the diminution therein of the albumen and casts.

As I have said, in 7 of these cases, labour spontaneously supervened. The remaining 6 improved so far, and then failed to establish a further improvement. So soon as this maximum improvement was reached, as indicated by blood-pressure, urine findings, eye-grounds, and general condition, the labour in each case was induced.

The results in the 14 cases were that 13 mothers and 8 children survived; and so I conclude that the above was not an unwise procedure in these cases.

It was interesting to observe that in these improved cases, a mild eclamptic condition was always induced by the labour. This was occasioned no doubt by the heightened metabolism and the additional toxæmia, consequent upon the strain of labour; and added to these, the necessary anæsthetic. In no case did actual fits occur, but the condition was pronounced enough to convince one of the wisdom of the delay.

3.—*Placenta Praevia.*

In the present series, the placenta was prævia in 8 cases, all multiparæ, but in only 2 was the

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implantation central, or nearly so. In one, it was marginal, and in 5, lateral on the lower uterine segment. In 6 of the cases, pregnancy had reached term, as nearly as could be estimated; while in the other 2, the thirtieth week was about its duration. Two of the children presented by the breech, and in all the others the presenting part was the vertex. In 3 of these vertex cases, on their admission to hospital, the cervical canal was sufficiently dilated to permit the immediate introduction of the hand, and the performance of a podalic version; and it was in two of these that the placenta was centrally placed. In the other 3 vertex cases, there was but little dilatation, and a bag was employed and used in the intraovular position. The breech presentations, on admission, revealed a cervical canal the size of a finger. A manual dilatation was immediately performed, the membranes ruptured, and the anterior leg was brought down into the vagina. In one of these cases, the mother was practically exsanguinated on her admission, and her child was dead. Though the bleeding was immediately controlled by the above manoeuvre, despite all stimulation, intravenous and otherwise, she succumbed, in two-and-a-half hours after admission.

Of the children, 4 were lost, and it is only fair to say that 2 of these 4 were premature.

The total result of this small series is that in the 8 cases, 7 mothers and 4 children survived.

In respect of placenta prævia, the following rules are to be observed.

(1) This first rule concerns itself with diagnosis. If a uterine hæmorrhage occurs during the last trimester of pregnancy, and be not associated with uterine pain, there is probably a low implantation of the placenta. If the blood-pressure be not elevated, and there be no albumen or casts in the urine, this probability is strengthened, though an actual diagnosis can only be made by means of a vaginal examination. If the placenta occupy the lower uterine segment, it can usually be felt as a definite sponge-like structure, underlying the presenting part of the child, which in consequence, lies unusually high, and is frequently somewhat laterally placed. The vagina appears long, the cervix is reached with some difficulty, and the lower uterine segment is thick and vascular.

(2) Now, given a single uterine hæmorrhage, and this diagnosis made, there is no doubt that the sooner delivery is effected, the better. Successive hæmorrhages tend to increase in severity, and even in hospital, assistance is not always immediate.

(3) If the implantation be central, or nearly so, and the child be alive, either at term or viable, I believe that a Cæsarean section in multipara and primipara alike, is the wise procedure, provided always that good surgical conditions can be secured.

(4) In private practice, where rubber induction-bags are seldom available, a firm gauze pack in the vagina, the application of an abdominal binder, and a hypodermic of a sixth of morphia, will ensure a period of safety, in which extra help may be procured, or the patient be moved to hospital. If delivery must be undertaken in her own home, this vaginal pack is invaluable. By its means, the hæmorrhage may be controlled, using, if necessary, successive packs until sufficient dilatation of the cervical canal be secured. The membrane may then be ruptured, and the descent of the presenting part promoted by means of an abdominal binder; or a podalic version be immediately performed.

4.—*Puerperal Infection.* — This is a wound infection, for the puerpera is a wounded woman —wounded, mainly, at the placental site. The organisms are chiefly the hæmolytic strains of the streptococcus, though in rare cases the staphylococcus is the causative agent. These organisms are present everywhere, on skin and mucous surface, where they exist as saprophytes; and they are specially numerous in the region of the vulva and perineum. For this perineal abundance, Victor Bonney blames the anus, and contends that its propinquity to the birth-canal represents a grave defect in our development. He mourns that there is no likelihood of any immediate change in this arrangement. These organisms may be resident in the vagina, even of the healthy parturient, though the abundant secretion, its acid reaction, and an acquired specific immunity, tend to speedily attenuate their virulence.

In each and every case the greatest danger is always from without, and with fresh strains —stranger ones, of these organisms.

As we all know, these facultative sapro-

phytes, are a menace only when there is a recent wound, for then they may become a parasite, and acquire sufficient virulence to make them pathogenic. Objectionable aliens they always are, and are never to be trusted. Innocent here and to-day, and virulent there and to-morrow, they are the cause of many wound-infections, the severe types of peritonitis, of erysipelas, and they seriously complicate, to say the least, the throat conditions of diphtheria, measles, and scarlet fever. Transferred from one individual to another, they frequently gain exalted virulence, so that, in merely swabbing a mildly infected throat, or in dressing an infected finger, the expectant mother may, by so doing, sign her own death-warrant.

Accordingly, during the final weeks of a pregnancy, there is need of a careful prophylaxis. So far as may be, the mother must be protected from all sources of infection; in particular, she should be isolated from all zymotic disease. There should be special cleanliness exercised about the vulva and perineum, and there must of course, be no sexual intercourse whatever.

As I have said, the place of greatest danger is from without, and now the time of greatest danger is at the time of labour. If, as a result of careless vaginal examination, or operative interference, these organisms are implanted within the vagina, they may soon infect a cervical tear, or even a placental site, while these wounds are fresh, and still unprotected by any reactionary tissue. The most dangerous time is the first 48 hours, for then these wounds are most vulnerable, and the woman's sole protection is the flow of fresh bactericidal blood, and the pregnancy leucocytosis. This, then, is the time of greatest risk, and the danger always is the untimely entrance of these organisms into the wounded zone.

Credé puts the case well when he says: "Limit as far as possible puerperal wounds, be restrained and gentle in all manipulations, and do not infect these wounds, or permit them to become infected." And so we are brought back again in the conduct of any labour to the "masterful inactivity," and the good technique.

The management of a third stage is also of first importance. This third stage is a miniature labour, and like the larger labour must, if possible, be spontaneous. After the expulsion of the child, the uterus is fatigued, and ample time must be given in which it may retract and recover. Its tone and its activity must in a measure be restored before it can undertake the separation and expulsion of the placenta, and the timely control of the hæmorrhage by a sufficiently firm grasp of the vessels. This time varies greatly in different cases, so one must not be mindful of the clock, since the uterus itself is the only trustworthy timepiece. It is always correct, always tells the right and proper time, by manifesting its strong and regular contractions. Post-partum hæmorrhage is more often the fault of the too-impatient physician than of the too-patient uterus. Moreover, a premature Credé may raggedly separate the placenta, and a cotyledon, or large portion of the membranes, be left behind, with all the consequent risks of hæmorrhage and infection. Such a hurried, and so incomplete emptying of the uterus, undoubtedly explains the relationship that exists between the length of this third stage and the number of the organisms, and the time of their appearance within the puerperal uterus. As you know, the puerperal uterus is usually sterile only for the first 48 hours after delivery. The investigations of Ahlfeld and Walthard have shown that in a given series of cases a uniformly short third stage implies frequent manual assistance, and that in these cases this uterine flora appears earlier and is more abundant; that measured in terms of time, a third stage, approaching an hour in duration is safest in this respect, and is in consequence, more likely to be followed by a non-morbid puerperium. The lesson here again is to wait in each case for the uterine recovery, and save for good and sufficient reasons, never hurry the third stage.

A careful inspection of the secundines is imperative, special attention being paid to the cotyledons, and to the margin of the placenta for the presence of torn vessels—the evidence of a succenturiate lobe.

Now, all this is prophylaxis, and we cannot sufficiently emphasize its importance, since in every case the proper treatment of child-bed fever is to prevent it. And yet, even in the best-regulated clinical families, it does occur. Last year, in the Montreal Maternity Hospital, with its 1230 deliveries, there were in all 10

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deaths—a mortality rate of 0.81%. Seven of these deaths occurred within 24 hours of admission, and of these, 2 were admitted with a ruptured uterus, one with a pleural empyema, one with an eclamptic toxæmia, 2 with a myocarditis and failing compensation, and one was an exsanguinated placenta prævia.

There were two deaths from puerperal infection. In one, the labour was spontaneous, only a rectal examination was made, and yet the patient died on the 9th day from a streptococcic infection, and we were altogether unable to account for its occurrence. In the second case, a Cæsarean section was done in a severe toxæmia, and though the child was saved, the mother died on the 4th day from a septic peritonitis.

The morbidity rate, during the same year—measured by the high standard of a single rise of temperature from any cause, to 100.6F. during the 12 or 14 days' stay in hospital, was 19.1% . It is only fair to add that in nearly half of these cases, *i.e.* in 8.5% the fever was due to extra-genital causes.

And now, *the Treatment.* Here there still remains a sharp divergence of opinion. The whole problem is in the nutshell of whether to enter, or not, the infected uterus.

Our own rule in these cases is this: if the case has been delivered under our own care or supervision, and we are in consequence reasonably sure that the uterus is empty, we never enter an infected uterus, save for the control of hæmorrhage. It is never safe to break through the reactionary zone in any septic wound to attack the infection, as it were, from behind; and, in this uterine situation, we cannot attack it in front. Accordingly it is much safer to make no local attack whatever.

To this general rule of non-interference, I am willing to concede the following exceptions. If the case has been seen only post-partum, and the history of the third stage be indefinite as to a perfunctory examination of the secundines; if the clinical findings bespeak something retained in utero; namely, a foul and abundant lochia, a large, soft, movable uterus, a patulous internal os, easily admitting the finger, at, or after the 4th day, and the fever be intermittent in type, it is permissible, I believe, to enter the uterus, but only with the finger, and to remove therewith any considerable placental fragment. A uterine curette, sharp or blunt, is never used, and even an intra-uterine douche is never given.

There is then, generally, no local treatment, though good uterine drainage is secured by the Fowler position, the ice-bag over the fundus, and the exhibition of hydrastin, or of ergot and strychnin.

If the infection be severe and systemic in type, 90 cc. of the polyvalent, antistreptococcic serum may be administered, at one time, but in divided doses. The hope is that the strains correspond, and that a beneficient adsorptive neutralization of the toxins be so brought about. Vaccines have no place in these acute cases, for the patient is already more than sufficiently vaccinated. An attempt may be made to stimulate the resistance of the patient, to awaken or increase the non-specific anti-bodies, by the intravenous injections of various chemicals, or of animal, or vegetable proteins. Nucleic acid is one of the latest of these. Long ago, Credé began with formalin and collargol, and the name of the re-agents is legion. Dr. H. C. Burgess, one of my colleagues, has great faith in eusol:—2 oz. of a carefully titrated solution being added to 10 oz. of normal saline, and given intra-venously, every second day. I have never been able to convince myself that any of these substances have any specific value, or that they are superior in any way to a plain glucose solution, a saline solution, or even distilled water.

The *general treatment* is summed up in the following directions. Feed the patient, and force the fluids by the mouth if possible, and where necessary, by the rectum. Secure an abundance of fresh air, and, above all, satisfying sleep.

Mr. Chairman, may I thank you, and the Alumni of this great hospital, for the honour of speaking before you. We are all engaged together upon this great service,—the prevention and the cure of disability and disease. In a true sense, our hospitals and our training schools must be the "proving grounds" of clinical experience. What is found good, we select and teach, holding fast only to that which is true.

At the same time, our duty is to advance our knowledge, and to encourage research; for we remember that it is only with a right conjunction of special thought with action or

science with art, that we can become a growing-point—a growing-point in our profession.

Our special service is to provide, as near as may be, a universal Yea, to the mother and her child: "Is it well with the child?" And, by reason of our service, the mother herself may make answer, "With myself and my child, it is well."

THE FOOT—A CLINICAL LECTURE

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DURING the first two years of life the most important lesion is the *congenital club foot or equinovarus*, presenting the familiar picture of the foot turned inwards and the heel drawn upwards by the shortened tendon of Achilles. Treatment of this condition should be instituted from the moment the child is born; and as follows:—after a swift but vigorous wrenching to correct the deformity, the improved position is maintained by adhesive plaster strapping extending as high as the knee. Care should be taken that the strapping be not applied too tightly, and one should be contented with slow but steady progress. This procedure is repeated every fortnight, and after four to six months it will be found that the foot can be placed in a corrected position with little or no effort. The strappings are now applied seldom or not at all, and when the baby begins to stand his little boots should have their outer borders raised one-quarter inch. Occasionally one meets a case where considerable toeing-in exists, owing to a twist of the tibia and fibula. Here plaster-of-Paris is necessary, applied from the toes to above the flexed knee with the foot strongly everted. One or two such applications at an interval of six weeks will usually suffice. A baby born with noticeaby *flat feet*, should have these wrenched and strapped in inversion, exactly the reverse of club foot.

In childhood between the ages of two and fourteen one frequently meets with cases of 1.—Flat or pronated feet; 2.—deformities due to poliomyelitis; 3.—tuberculous and syphilitic arthritis; 4.—Uncured congenital club foot; 5.—Still's disease, a polyarthritis of childhood.

(1) *Flat or pronated feet* are generally acquired by bad habits of walking and standing. Rickets and congenital defect are also frequent causes. Mild cases should be treated by raising the inner side of the soles and heels one-quarter to one-half inch, until the inner ankle is no longer prominent. In this way the body weight is borne on the outer and stronger side of the foot. The child should be encouraged to toe in when walking or standing, and should not be permitted to go barefoot or in running shoes. When the child is old enough foot-strengthening exercises should be taught. Where the deformity is so extreme as not to yield to this simple treatment, a light brace is used extending from the boot heel up the outer side of the leg to below the knee. The ankle is then pulled towards the iron upright by bandage or strap, overcoming the deformity. This should be worn for months or years until improvement has been obtained and milder measures will suffice. Attention to these details will give a good foot in most cases, though it may occasionally be necessary to carry on the treatment for many years. It may be well here to draw attention to the flat foot, usually rigid, which appears after a blow or sprain and which, after a month or two, manifests the swelling and tenderness of tuberculous arthritis.

In an advanced grade of flat foot in children over eight years one may practice the astragalo-navicular arthrodesis of Ogilvy, which has yielded excellent results. The operation is followed by four or five weeks fixation by plaster-of-Paris of the foot in an inverted position.

(2) *Paralytic deformities.*—These are of all kinds, usually the result of infantile paralysis, though spastic conditions are not rare. Up to

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the last few years such deformities contributed largely to the well-being of the brace maker. Thanks to the comparatively recent adoption of arthrodesis in conjunction with tendon transfer, crooked feet of almost all kinds can be made to remain straight without the need of artificial support.

(3) *Tuberculous arthritis.*—This usually follows a blow or sprain. The foot, after such trauma, does not recover in the usual time but remains painful, stiff, and even swollen. A month or two after the injury, marked tenderness develops over the joint affected, and an evening rise of temperature is noticed. X-rays finally confirm the diagnosis, demonstrating loss of substance. *Luetic* arthritis must be excluded by the absence of the usual history and the lack of signs of the constitutional disease, aided by a negative Wassermann. It is important to remember the existence of isolated non-tuberculous disease of the scaphoid (scaphoiditis or Koehler's disease), which closely simulates tuberculosis of this region. It is to be recognized in the X-ray by the presence of disease limited strictly to the scaphoid which is reduced in size, while the adjacent bones, usually involved in cases of tuberculous disease, are seen to be untouched. The clinical picture is one of flat foot with great tenderness over the scaphoid. This disease is of unknown etiology, runs a benign course and with protective treatment comes to an end in about six months. Another mild disease seen in childhood and likely to be confused with tuberculosis is epiphysitis of the os calcis with tenderness on either side of the heel over the epiphyseal line. Its origin is generally obscure and after a few months it passes away. It may be truly termed one of the "growing pains" of childhood.

The treatment of bone tuberculosis of the foot is rest and crutches, immobilization at right angles in a plaster shell fenestrated or removable to permit the use of direct sunlight. In addition, general anti-tuberculous treatment should be carried out. Abscesses should be left alone if not progressing, but if increasing in size should be aspirated and injected with a drachm or two of iodoform emulsion, a pressure bandage being subsequently applied. In the case of sinus formation every precaution should be taken against the entrance of mixed infection. In a word, the treatment is conservative. In childhood it is astonishing to see from what extensive disease a foot may recover, while in the adult a tuberculous ankle joint will practically never get well enough to permit of ordinary use.

(4) Up to the age of about eight years a case of *incompletely cured club foot* is to be treated conservatively by wrenching, over-correction and plaster. After this time, removal of a wedge of bone from the outer side of the foot may be expected to do less damage than the repeated trauma of wrenching. The wrenching, of which several applications are generally necessary, is carried out to the point where the foot can be over-corrected by a touch, and in this position plaster-of-Paris fixes the foot for six or eight weeks. After operative interference over-correction need not be so extreme. The wearing of braces is to be discouraged as ineffectual. A cure is to be credited when the patient can voluntarily over-correct his foot, and it is to be emphasized that to the possibility of cure there is no age limit.

Still's disease is a rare form of polyarthritis seen in childhood. Its importance lies in the fact that it generally leads to dreadful crippling. The association of swollen and painful joints, the fingers as a rule included, with general enlargement of the lymph glands and spleen, makes the diagnosis unmistakable. Removal of any infective focus, arsenic, cod-liver oil, heliotherapy have been employed in the few cases that have recovered. A warm climate permitting much open air is of benefit, and the child should be urged to continue the use of its legs. When once it takes to bed the picture is too often one of hopeless invalidism.

In the flat foot of adult life pain and weakness are usually complained of in the region of the ankle, while tenderness can generally be demonstrated under the scaphoid at the site of the over-stretched calcaneo-navicular ligament. Strapping the foot in an inverted position usually gives immediate relief. This is because the weight of the body is deflected towards the outer and stronger side of the foot, thus relieving the intolerable pressure on the inner and weaker side. With this end in view, the inner side of the patient's shoes, both soles and heels, is raised one-quarter to one-third inch, with the advice to adopt an intoeing gait and to

throw as much weight as possible on the outer side of the foot. Certain exercises are useful in strengthening the muscles which invert the foot and so support the arch. Perhaps the most helpful of these is a rotating movement downwards, inwards and upwards of the foot, which can be done quite satisfactorily without removing the shoe. This exercise should be repeated for three or four minutes at least ten times daily. Young and active patients, even while carrying on their daily work, are frequently cured by such measures.

Foot plates or arch supports are indicated in patients of a heavy build, whose deformity is well marked and the pain and disability distressing. Here speedy relief of suffering is indicated, and strapping the foot is mechanically insufficient to give the necessary amount of support. In general, plates are useful in the middle-aged and elderly, where little response is to be expected from exercises, gait, etc. In addition they are useful in cases where one wishes speedy relief from static backache, sacro-iliac or sciatic pain, chronic hip and knee strain, etc. Plates are contra-indicated in cases where the foot resists inversion and cannot be held by strapping in a corrected position. Flexibility must first be gained by the use of a brace extending from heel to calf up the outer side of the leg. By means of an ankle strap or bandage, the foot is pulled towards the upright of the brace into a position of inversion. In very rigid cases, where shortening of the peroneal muscles and perhaps even adhesions of the tarsal joints prevent the movement of inversion, an anaesthetic is necessary to permit forcible wrenching of the foot and at times to permit resection of a portion of the shortened tendons. Plaster-of-Paris fixation for six weeks in an over-corrected position should follow, to be succeeded by brace treatment until a normal power of inversion has been obtained. Plates are not usually successful in cases of marked deformity owing to their discomfort, the scaphoid tubercle bearing heavily and painfully upon the steel support. In such cases one may use a softer leather support built in the shoe, the latter being raised on the inner side. In some cases resection of a wedge of bone from the inner side of the tarsus is indicated. A third contra-indication to the use of plates is the presence of acute or chronic arthritis in the foot, in which case but little relief is obtained, as the foot is too sensitive. The Whitman type of plate is to be recommended, made of steel forged to fit a corrected plaster model of the foot.

The recognition of *arthritis* of any kind in a disabled foot is of the utmost importance. Disturbances of the longitudinal and metatarsal arches, hallux valgus, hammer toe, etc., when of purely mechanical origin may be expected to respond to purely mechanical treatment. The presence of arthritis, on the other hand, at once transforms the problem of treatment from a fairly simple procedure involving strapping, foot plate, etc. to one which may be found to be much more difficult, involving as it does a search for the cause. Arthritis is to be recognized (1) by the presence of pain and tenderness, and still more so by swelling in other joints of the body which are under no mechanical strain, as for instance swollen finger or toe joints in a case of flat foot, for as a rule, a swollen joint indicates arthritis; (2) by the absence of relief following such a therapeutic test as strapping a flat foot or raising a metatarsal arch; (3) by the known presence of an infective focus such as chronic tonsilitis or urethritis. A pitfall for the unwary exists when both arthritis and mechanical defects co-exist. A frequent example of this is the presence of gonorrhoeal arthritis in a flat foot, where a rosy prognosis based on the obvious arch condition will bring discredit to the physician consulted. In such cases, which are very frequent, each element of disability, whether mechanical or infective, needs its own proper treatment. For the arthritis a source of infection must be sought, whether in tonsils, urethra, teeth, intestinal tract, systemic infection, or metabolic processes. Baking and massage will be found useful adjuncts to the treatment. Gonorrhoeal infection is to be suspected when pain and tenderness exist under the heel, at the junction of the plantar fascia with the os calcis. The pain of such a condition is lessened by removal, so far as is possible, of the pressure under the heel. This is done by the use of a small heel-pad with a hole corresponding to the tender point, by raising the sole and heel on the inner side when the foot is seen to be pronated, or by the use of a highly arched foot plate designed to take as much pressure as possible from the heel. When this inflammatory process (gonorrhoeal periostitis) has gone on

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to the extent of forming a bony spur which may be felt or shown in the X-ray plate, an excision may be expected to give good results.

Tuberculosis of the ankle joint, when seen in the adult, has usually been present for years. As a rule this condition resists treatment to a much greater extent than obtains in childhood, and cannot be cured to the extent of bearing weight usefully. After conservative treatment has been given a fair trial, amputation should be considered. Tuberculosis of the tarsus has a somewhat better prognosis and is to be treated by freedom from weight-bearing, immobilization, heliotherapy and general antituberculous treatment.

Disturbances of the *anterior or metatarsal arch* are frequently met with. The metetarsal heads may be noticed to be depressed, a callosity on the sole marking the point of increased pressure. Tenderness will be present in the metatarso-phalangeal joints affected, and the pain, when acute, may radiate up the leg. A weakened longitudinal arch often accompanies this, and should be corrected. Strapping the metatarsus with adhesive plaster, a pad of piano felt three-eighths of an inch thick being inserted just proximal to the tender point, as a rule gives speedy relief when no arthritis is present. Baking, massage and exercises for the foot and toes help in restoring the normal mechanical action of this part of the foot. A bar of leather three-quarters of an inch broad and one-quarter of an inch thick often gives much relief when attached to the sole of the shoe immediately behind the metatarsal heads. Where the toes are drawn up into the air by marked contraction of the extensor tendons and correction of the deformity is impossible one should consider operative interference.

Morton's metatarsalgia is characterized by sudden sharp and severe pain in the region of the fourth metatarso-phalangeal joint, radiating up the leg and only to be relieved by removing the shoe and manipulating the foot. The metatarsal head will generally be found depressed, and treatment should be directed towards remedying this deformity by pad, foot plate or bar. In very resistant cases the metatarsal head, which is thought to cause the pain by interference with the digital nerve, may be excised with immediate relief.

One of the most difficult problems in the foot concerns the presence or absence of arthritis in these cases of metatarsal pain. The metatarsal arch may be plainly depressed, with pain and tenderness referred to the dropped metatarsal heads. Even in such a case, one should resist the temptation to attribute the entire disability to the obvious mechanical condition, and should await the result of corrective treatment, which may be considered a therapeutic test, before risking the error of too favourable a prognosis. An arthritic element may declare itself here by persistence of the pain or by the history and actual appearance of pain in other joints of the body, upon which the additional problem at once presents itself of determining the source of the arthritis.

Hallux valgus or bunion usually arises as the result of shoes too narrow or too short. Arthritis is also a frequent cause. Mild cases of mechanical orgin are to be treated by proper shoes with plenty of room for the toes and a straight inner border. To this should be added attention to the pronation which usually accompanies hallux valgus, exercises for the foot and the toes, and a pad between the great and second toes. If arthritis exist it should be treated by removal, if possible, of the cause. In well marked cases Hueter's operation of resection of the head of the first metatarsal bone is the most satisfactory procedure. One must be most careful to exclude arthritis in any case where operation is in view, as its presence is likely to result in a persistently painful joint after the operation, and, at times, ankylosis of a very disabling nature may supervene.

Hammer toe, usually due to improper footwear, is readily cured by resection of the prominent distal portion of the proximal phalanx. This is quite easily accomplished through a lateral incision under novocain. The toe should then be splinted to its fellows on either side. Tenotomies, manipulations and strappings do not as a rule succeed.

Tenosynovitis of the tendon of Achilles may appear after strain or injury, especially in cold weather. Tenderness, and at times even crepitus, are to be elicited. The condition is usually characterized by persistence. Relaxing the tendon by raising the heel a half-inch is of use in the treatment, the foot also being bandaged, baked and massaged. Some cases appear to follow or to be accompanied by infection, and treatment of a sore throat, urethritis, etc. may be necessary to a cure.

DERMATO-MYOSITIS

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ALTHOUGH a considerable number of cases of dermato-myositis or poliomyositis have been recorded, the affection must be regarded as one of the rarer manifestations of disease. Lorenz draws a sharp distinction between suppurative processes in the muscles, the result of general sepsis, and that in which there is a widely spread myositis without tendency to suppuration; reference to the latter only is made in this communication. Owing to the frequent association of a firm, brawny swelling of the skin and subcutaneous tissues and of cutaneous eruptions, the condition is often referred to as dermato-myositis.

The following case was observed in 1915 at No. 1 Canadian General Hospital in France.

Private M. aet. 45, was admitted to No. 1 Canadian General Hospital on November 12, 1915, complaining of pain and swelling in the forearms and to a less extent in lower extremities. His story on admission was that he had not been feeling well for five weeks, having lost his appetite and suffered from nausea and severe diarrhoea for several days. Three weeks previous to admission he noticed, on lifting a bucket, that his hand was stiff and weak and he was unable to use it. At the same time he noticed that his legs were painful and stiff and they dragged on walking. The arms became gradually more swollen, attaining their present condition in a week, since when they have remained stationary. He has had no fever or chills, but had a feeling of being cold without any abnormal elevation of temperature.

Previous History.—He has been in the army for twenty-one years, being stationed in India from 1898 to 1904, and when there, suffered from repeated attacks of malaria. Nine or ten years ago he suffered from an attack similar to the present one; his hands and arms were swollen to the elbows, and he was laid up for six weeks.

Examination.—He is a fairly nourished man with a good colour. Temperature 98°, pulse 72, respirations 20. The forearms front and back, especially the former, are swollen, rather brawny, pitting on pressure and are slightly tender over the swollen areas. Owing to the infiltration of the forearms he can only move the fingers about half an inch. There is slight œdema just above the elbows and some tenderness of the deltoids, pectorals, and muscles of the back. In the legs there is an area 2½ x 1½ inches slightly raised over the extensor muscles just above the ankles. The edge of the spleen can just be felt, the chest and abdomen are otherwise normal. The urine is acid, sp. gr. 1022, with a trace of albumin, no sugar and a few hyaline and granular casts. There are 24,000 white cells in the blood to the c.mm. and 2% of eosinophiles. A differential count on a second occasion showed polymorphus 78%, eosinophiles 1%, small mononuclears 13%, large mononuclears 6%, transitionals 2%.

November 18th. He vomited several times yesterday and had several loose stools. Under gas anaesthesia a small portion of muscle was removed from the fore-arm for examination. Swelling noticeable in arms has extended to the hands which are slightly reddened. A troublesome cough which has existed for several days has increased in severity; the lungs are full of coarse râles; and patient complains of a sharp catching pain on the left lower thoracic region.

November 19th. Patient is very weak; the pulse is small and feeble; cyanosis is present with defective resonance at both bases. Death took place that same evening. During his stay in hospital, the temperature had remained normal or subnormal and the pulse varied from 72 to 84 until the last day of life.

Autopsy by Dr. J. J. Ower. The body is that of a well developed man. There is marked pitting on pressure on forearms, hands, thighs, and calves. The *peritoneal cavity* is negative.

The lungs.—A small amount of clear yellow fluid was found in the pleural cavity on the left side. The surface of the left lower lobe has a fine grandular appearance, and a few shreds of a fibrinous exudate are seen. The left lower lobe is firm to the touch and on section presents a greyish surface from which a frothy serum

exudes. Sections float in water, and there is no evidence of broncho-pneumonia. There is a large amount of bloody fluid at the right base but otherwise the lungs are normal.

The heart is slightly enlarged; a number of small white plaques are seen on its surface; the valves are normal; the muscle is somewhat pale.

The liver, kidneys, stomach and *intestines, pancreas, bone marrow* and *adrenals* are normal. The spleen is small, its capsule wrinkled but otherwise negative.

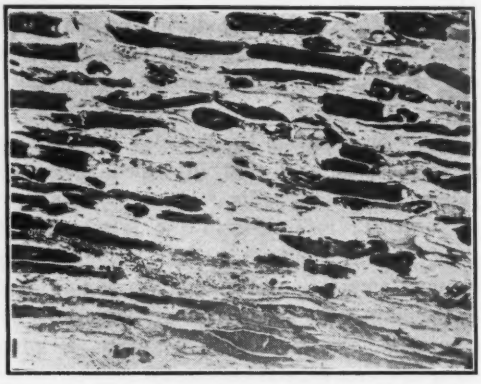
Muscles.—The voluntary muscles generally show marked pathological changes. The greatest changes are seen in the recti and in the psoas which present a generalized patchy mottling (orange yellow and brown) due apparently to small haemorrhages and degeneration of the fibres. The left psoas shows a large intra-muscular haemorrhage with a firm clot in the centre of the muscle. Numerous small patechial haemorrhages are seen in all the muscles of the arms and legs and in the pectorals; but they are not so numerous as in the recti and psoas. The inter muscular fascia shows marked œdema in some areas and in the arms there is a considerable amount of subcutaneous œdema. The muscle fibres are very fragile.

Microscopical Report.—The heart is negative; the liver, spleen, kidney and pancreas are normal. There are no signs of pneumonia seen in sections of the lung tissue.

The following report furnished by Dr. Rhea is based upon a careful examination of sections made from different striated muscles. The type of lesion is similar in the various muscles examined except that the degree and extent of involvement varies. In all sections there is a diffuse lesion which involves the muscular tissue, interstitial tissue and to a less extent, the blood vessels. The muscle shows marked changes. There is loss of striation, varying degrees of œdema, vacuolation and degeneration. Scarcely has a single muscle fibre escaped in the various sections examined. The degree of involvement varies not only in the different fibres but even within the same fibre. Some of them show very advanced degeneration; others early changes and still others all the changes referred to above. This is well shown in the micro-photograph of a longitudinal section of a muscle. The interstitial tissue is œdematous and in places shows recent hæmorrhage. The blood vessels are distended with blood and one vein, as illustrated in the drawing, shows a recent thrombosis. Cultures from the incision taken during life on bouillon, bile, agar and litmus milk, aerobic and anaerobic, were sterile.

The diagnosis is this case was suggested by the tender, brawny, spindle-shaped swelling of the forearms and the swelling in a less marked extent of the legs. Confirmation was obtained by microscopical examination of a piece of muscle excised from the forearm. The history of a previous attack is probably correct as it is supported by many other recorded cases. Although fever is usually present, its absence has been occasionally noticed as in a case of Koster's and one of Clowe's.

The leucocyte count of 24,000, higher than in other recorded cases, was noteworthy in view of the entire absence of cellular exudation in the muscles: it was also higher than might be expected from the numerous hæmorrhages. splenic enlargement, although not found at autopsy, was present during life, and the wrinkled character of the capsule was in keeping with a previous enlargement. There was no change in the kidneys to account for the albuminuria and casts. Trichinosis was considered a possible diagnosis, but the absence of any swelling of the face whilst under observation, the lack of eosinophilia, and finally, the microscopic examination of the muscle fibres excluded this condition.

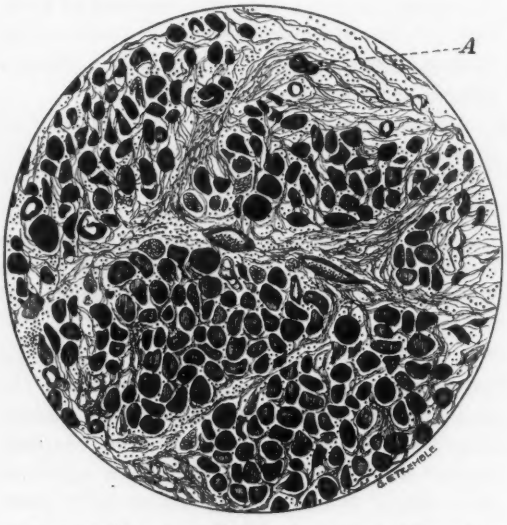


Longitudinal section of muscle.—Micro-photographic

The *etiology* of the disease is still wrapped in obscurity. Although regarded as an infection by many writers, cultures have almost invariably proved sterile. Schmitz and Koln, however, isolated a staphylococcus which caused fatal sepsis in animals and which they regarded as specific, as the morbid changes were limited to the muscles. The probability of an infection, however, is rendered probable by certain features of the disease, such as the elevated temperature, the small celled infiltration in the muscles, the splenic enlargement, and the occasional occurrence of leucocytosis and of inflammation of the serous sacs. The malady again is sometimes preceded by angina or acute articular rheumatism and it is further allied to the latter by the cutaneous manifestations such as erythema and purpura.

Other writers regard the condition as due to a toxin. Senator records a case following the ingestion of stale crabs. Albu reports one in which attacks came on when the bowels became constipated and Boeck, one following the rubbing of the skin with copaiba. The early gastro-intestinal disturbances such as diarrhoea and vomiting is also regarded by these observers as supporting their view, as is also the absence of cellular infiltration and of fever observed in some of the reported cases. Her-

rick records a case probably due to syphilis, and Lorenz one with recurring attacks attributed to the same cause.



Cross section of muscle showing œdema, hæmorrhage and degeneration of muscle fibres.
At "A" is a thrombosed blood-vessel.

Morbid Anatomy.—The morbid changes are striking and widespread in the subcutaneous tissues, skin and muscles. Oedema is present in the subcutaneous tissues and between the muscular fibres, even penetrating between the fibrillæ. The muscles themselves are more friable and softer than normal. In Hepp's case there occurred a rupture of the rectus abdominis. The colour is for the most part paler than usual, varying from a pale brown or red to orange yellow. Hepp compares the appearance to the muscles of the rabbit. Small and occasionally hæmorrhages of considerable size are found in some cases. Microscopically most cases show a marked intermuscular cellular infiltration, penetrating between the individual fibres and found particularly around the blood vessels, which are usually distended and filled with blood. This infiltration, as in the case here recorded, may be entirely absent and the changes confined to the fibres themselves. These present varying forms of degeneration. In some the fibres disappear leaving only sarcolemma; in others the striæ are indistinct or absent and there may even be a fine longitudinal striation, or waxy or granular changes. The fibrillæ are sometimes swollen giving rise to localized bulgings and convoluted outlines. An increase of the nuclei of the sarcolemma and of the muscular fibres are sometimes met with and are regarded as evidence of regeneration. In fatal cases it is, however, more common to find a disappearance of muscle nuclei from many of the fibres.

The *clinical manifestations* of the disease vary considerably. Lorenz in his excellent article in Nothnagel's *Specielle Pathologie* distinguishes four types: (1) dermatomyositis; (2) poliomyositis haemorrhagica; (3) poliomyositis associated with erythema multiforme; (4) certain unclassified cases. Apart from convenience of description, this method of treatment seems unduly complicated and in the absence of any known etiological factors, we cannot draw sharp distinctions from variations in clinical or pathological characters. The onset may be abrupt or preceded by prodromal symptoms, particularly in chronic cases, extending over a period of a few days or weeks, consisting in lassitude, headache, or gastro-intestinal disturbance such as anorexia, nausea and vomiting. The temperature is usually elevated, being sometimes as high as 104° or 105° with chills and sweats. A few cases are recorded in which fever was absent throughout, but profuse sweating is often a prominent feature throughout the malady. Involvement of the muscles is marked by pain, which may be severe, stiffness and particularly by sensitiveness to pressure. With these symptoms or following shortly afterwards, swelling and induration develops over some of the affected parts; pitting on pressure is absent or only brought out by very firm pressure, but is noticeable at the borders where induration is less marked. Over many muscle areas marked tenderness may exist without swelling. Most frequently the swelling, pain, and tenderness begins, in one or more limbs, often extending to the trunk or other limbs. It may, however, start in the face, especially in the eyelids and lips. In the limbs the region from elbow to wrist and from knee to ankle are most frequently affected, giving a spindle shape to the limb and often sparing the hands and feet. Muscular weakness is a marked feature, but all movements are so painful that it is difficult to say whether the limitation of movement is due to pain or to muscular changes.

In addition to the limb muscles, other groups

are frequently involved. The shoulders and hips, buttocks and trunk, the abdominal and intercostal and diaphragm may all share in the morbid process. Less frequently the muscles of the neck and tongue, of mastication and of the eye may become affected.

The *cutaneous manifestations*, although not a necessary part of the malady, are present in most cases, varying considerably in their extent and appearances. Reddening of the swollen areas has led to a diagnosis of erysipelas and in the face such a resemblance may be closely simulated at the onset. Other eruptions which have been observed are macular roseola, urticaria, nodules like erythema nodosum and hæmorrhages in the skin. Pigmentation of the skin over wide areas is an occasional sequel and scleroderma has been observed by Oppenheim and Unverricht. Involvement of the laryngeal and throat muscles sometimes leads to suffocative attacks or to inhalation pneumonia. Kells (2 cases) and Oppenheim (1 case) record changes in the heart similar to those seen in the skeletal muscles

Recovery when it takes place is usually complete, but in a few instances induration and contraction result. Relapses are frequent, the swelling and tenderness passing from one muscle territory to another, whilst improvement or recovery takes place in the muscles earlier affected. A history of recurrence of the disease after an interval of months or years has been observed. In Thayer's case, attacks coming on as suddenly as angio-neurotic œdema and passing off in a few days occurred at intervals of from six months to three years, whilst Blumer reports a case in which two distinct attacks both followed tonsillitis.

Albuminuria is not infrequent and may be present in both febrile and non-febrile cases; acute hæmorrhagic nephritis is recorded by Senator. In Jacobi's case acute cirrhosis of the liver was found. The leucocyte count is usually below ten thousand (10,000). In Schmitz and Cohn's case there were 15,000, and in the case recorded above, 24,000.

A fatal termination is to be anticipated in a large proportion of cases, particularly in the acute forms. In 28 cases collected by Steiner 17 proved fatal. The immediate cause of death may be due to failure of the respiratory muscles leading to inhalation pneumonia or there may result a terminal infection of the pleura or pericardium. In other instances it is apparently due to toxæmia.

I am indebted to Dr. Simpson for the microphotograph and to Dr. Tremble for the drawing of a cross section of muscle.

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Treatment of Pneumonia.—Dr. Henry F. Stoll, Hartford, Conn., writes: Don't think of pneumonia solely as a disease of the lungs. Heart failure is responsible for many fatalities. At the first examination and at each succeeding visit, note the position of the apex beat and observe the quality of the heart sounds; this can be done without disturbing the patient, and may enable one to detect the first signs of a failing myocardium or the beginning of pericarditis. Don't make a complete examination of the lungs every day unless you suspect pus; it exhausts the patient. Never direct a patient to "sit up" or to "roll over" if very ill, to examine his back; he may be turned on his side with little discomfort if it is done by reaching across the patient, placing one hand under the further shoulder, the other under the pelvis, and gently and slowly turning him toward you. Whenever there is a suspicion of diminished myocardial reserve, small doses of digitalis should be begun from the onset. Don't forget that an increase in restlessness and in the respiratory rate may be due to a distended bladder, and that many cases of incontinence can be cured by a catheter. Save in the very feeble, cold, fresh air is desirable—but be sure that you have a warm patient. When serum (Type I) is indicated, its curative effects are directly proportionate to the promptness of its administration. Quiet and sleep are absolutely essential, and the elimination of unnecessary exertion may be life-saving.—*Jour. Am. Med. Assoc.*, April 14, 1923.

A SERIES OF CASES OF PURPURA HAEMORRHAGICA AND APLASTIC ANAEMIA DUE TO CHRONIC BENZOL POISONING IN A CANNING PLANT*

H. B. ANDERSON, M.D., *Toronto*

With case reports

JULIAN S. BOYD, M.B., *Simcoe*

and

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THE increasing use of benzol and its congeners for industrial and commercial purposes makes it a matter of great practical importance that physicians as well as the public at large should be fully aware of the dangers attending the use of these products and of the symptoms by which the poisonous effects are manifested. The question is no less interesting from the scientific standpoint on account of the light which a study of the toxic effects of benzol sheds upon the etiology and pathogenesis of purpura hæmorrhagica and affections of the hemopoietic system, especially upon aplastic anæmia. I therefore feel much indebted to Dr. Boyd for the opportunity of seeing with him a number of patients suffering from chronic benzol poisoning and wish to offer my congratulations to him and Dr. Jackson, who was associated with him, for the promptness with which they recognized the nature of the trouble, the thoroughness with which they followed up the cases, and the effectiveness of the measures used to control the situation.

The symptomatology is so strikingly illustrated by the cases which Dr. Boyd and Dr. Jackson will report, that one need not dwell on it further at this time so that I shall confine my remarks largely to a more general consideration of the subject and to a brief review of the literature.

Benzol, C_6H_6, is made during the fractional distillation of coal tar, coming over at about 80° C. The commercial variety usually contains more or less toluene, $C_6H_5CH_3$, and xylene, $C_6H_4(CH_3)_2$, which have a slightly higher distillation point. In making coke and its by-products, these lighter materials are given off first, are absorbed in higher boiling oils and subjected to fractional distillation. Crude carbolic acid is the next product to come off; then naphthalene; then anthracene, and finally coal tar pitch. In the manufacture of aniline dyes, benzol, toluene, xylene, all of which are toxic; naphthalene, which is less toxic; and anthracene probably non-toxic are the "crudes" used in the process.

Benzol is also one of the derivatives of petroleum. Petroleum is a mixture of hydrocarbons from CH_4 to $C_{30}H_{62}$ with varying proportions of the lighter and heavier compounds. The lower distillates, that is, those which come off at 30°C. to 70° C. are used chiefly for motor vehicles: the next series, namely gasoline and benzine and naphthalene, come off at 80° to 170° C. and are largely used in industry as fat solvents, in dry cleaning, for rubber cement, for quick-drying paints, and for varnish and shellac: kerosene comes next, then the heavier lubricating oils, then the vaselines and finally the paraffins.

Acute poisoning from the fumes of naphtha or from contact with it, has been noted in English and American reports on trade sickness in the rubber industry, by the French in connection with dry cleaning, by the Germans in both these industries and in the use of quick-drying paints. In rubber manufacturing plants where large quantities of naphtha are used in cement and usually kept in uncovered cans on the benches, a mild form of acute poisoning is very common, known as the "naphtha jag." Symptoms consist of excite-

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ment, gaiety, giddiness, irritability, pugnacity, followed by depression, headache, slight nausea, insomnia, lassitude, etc. Chronic naphtha poisoning has no characteristic symptoms. Potts reports a case of encephalitis caused by gasolene fumes in a man who worked for four months filling automobile tanks. I know of two cases of severe gasolene poisoning in Toronto—one fatal.

Benzene, toluene and xylene act directly on the central nervous, the circulatory, respiratory and hæmopoietic systems and especially on the bone marrow. They also cause capillary hæmorrhages due either to solution of the endothelial cells or to fat embolism with rupture of the capillaries; fatty changes in the kidney and liver may result, and hæmorrhages from the gums, nose, throat, stomach, into the lungs, mucous membrane, skin, serous membranes, etc. There is lessened resistance to bacterial infection. Lesions may be reproduced in animals by inhalation of the fumes in a closed chamber. Excitement and delirium may be early symptoms. At times it is the rescuer who loses his life, (an evidence of individual susceptibility) and young girls are especially liable to the effects of the poison.*

In the explosives industry in the United States in 1916-17 there were 14 instances of poisoning from benzol or its derivatives. Usually industrial benzol poisoning pursues a slower course and presents the typical picture of purpura hæmorrhagica and aplastic anæmia. Such cases have been reported by LeNoir and Claude in French dyeworks, by Austrian factory inspectors in rubber works, by Santesson in a tire factory in Sweden, by Selling and by McClure in an American cannery using benzene-rubber cement, and by Harrington in rubber works in Massachusetts where the solvent for cement was benzene.

Reports of the British Chief Inspector of Factories for 1918 contains reference to two cases of purpura hæmorrhagica in men spreading fabric for balloons. Many of these cases ended in death, associated with severe hæmorrhages and blood destruction, the white corpuscles falling to 800 or less and the reds to less than one million. Benzol poisoning is increasing in American industry since the War as benzol is now produced in large quantities in America in the fractional distillation of coal-tar: it is displacing the more expensive petroleum solvents for rubber in the making of rubber cement, paint and varnish removers, coal tar paints, shellacs, airplane dopes, and as the starting point in the manufacture of phenol by the usual American process: it is also replacing toluene and xylene in the manufacture of drugs, perfumes, dyes and explosives.

In Germany where large numbers of men have been employed in dye manufactures for many years, it has been found that an undue proportion of these workers suffer from a papillomatus type of tumour of the bladder, though it has been impossible to reproduce such growths in animals by the administration of the compounds. In human beings there appears no doubt as to its connection.

Benzol derivatives such as nitrotoluene, chloro- and nitrochlorobenzine, dinitrobenzine and dinitrophenol, etc., act in a somewhat similar way to benzol though less actively. Sickness among workmen in France, England and the United States led Perkins to undertake a study of munition intoxication. The portals of entrance of the poisons are the skin and the respiratory and digestive tracts, depending upon the nature of the employment.

Selling reported the first important outbreak of benzol poisoning in America, occurring in a can-manufacturing plant, employing 325 hands in the suburbs of Baltimore. In the coating room a substitute for solder was used consisting of pure rubber, rosin and a colouring matter dissolved in commercial benzol. Among the twenty-three hands in the coating room working at the cover machines, there were 14 girls between 14 and 16 years of age who were particularly exposed to the fumes resulting from evaporation of the benzol in the drying of the cement. In this process ten gallons of benzol were evaporated daily in a room with open windows and with excellent ventilation in summer. A well marked odor of benzol was noticeable about the machines and a weaker odor throughout the room generally. Three girls, 14 years of age, showed the effects of poisoning and one of these may be described as typical of the condition.

The patient was feeling well, but on June 1, 1909, was noticed to be pale and had a pur-

*Another fatal case is reported in the Toronto morning papers, May 18th.

puric eruption. She was admitted to hospital June 28th: she had been working in the factory for 4 months with no symptoms whatever, and left owing to her mother's illness. In the latter part of May, she first noticed blue spots on the arms and legs and on the trunk and face: from the gums, nose and throat developed, that from the throat being severe and persistent. Later, weakness and dizziness developed. On admission it was noted that she was well built and well nourished but had a waxy pallor. Scattered purplish macules were distributed over the arms and legs, and on the trunk and face: there were also some larger ecchymoses. The gums were bleeding slightly, especially about a broken root. About the left tonsil and right anterior pillar there was a dark-brown necrotic-looking mass. The heart and lungs were normal: the spleen was not enlarged: the liver was slightly enlarged. There was moderate neuro-retinal œdema with muscular hæmorrhages. The patient became paler, toxic and stupid; the pulse small and weak. After transfusion she improved for a time and then relapsed, became weaker, and died July 6th. Temperature ranged from 99.4° to 104.6°: pulse 108 to 165. The urine showed a trace of albumen and hyaline and granular casts. No jaundice. The blood was pale and watery, platelets were practically absent, one megaloblast but no normoblasts were found. Microscopic examination of tissues obtained at necropsy showed aplastic bone marrow, hyaline necrotic areas in the Malpighian corpuscles of the spleen; there was also a fatty degeneration of the liver and heart muscle.

The three cases of chronic benzol poisoning which we (Boyd and Jackson) are reporting, occurred in close sequence in a plant manufacturing "sanitary" tin cans, in which was used, as a medium for packing or sealing the joints between the body and ends of the cans, a solution of gum rubber, beeswax, and an inert coloring matter dissolved in benzol, known to the employees as "dope."

The solution is applied mechanically to the edge-groove of the caps and the benzol is driven off by steam heat. The caps, on delivery from the drying machines, undergo inspection for faulty application or other defects. Faulty ones are "re-doped," or if spotted elsewhere than where the solution should be applied, are cleaned with pure benzol, either applied with a brush or sometimes with a wad of cotton-waste held in the worker's hand.

This process has been in use in this plant for the last nine years with no known trouble up to the spring of 1922. The source of supply of benzol had been changed during the past year. Some of the employees were in the habit of using benzol to clean their hands on leaving work.

Case I. came under observation March 10th, 1922. Due to the lack of previous trouble of this kind, the case was not recognized as benzol-poisoning, but considered as a purpura hæmorrhagica due to an unknown cause. The patient's family, however, early conceived the idea that her illness was due to the "dope." For this reason, after the patient's death, we consulted the Workmen's Compensation Board asking for information and for an opinion as to the possibility of the case being one of benzol poisoning. The Board, however, did not think there was any probability of this.

The patient was a girl, aged 15 years, employed for about three months on the compound applying machine, part of her time feeding caps, and part of her time removing at the outlet. She had been sturdy and well nourished. She complained of bleeding from the gums and swelling of the upper lip; the gums were spongy with bleeding around most of the teeth, particularly about the stump of the first left lower molar. The swelling of the upper lip was apparently due to extravasation of blood. The patient was very pallid, felt weak, and tired easily. About two weeks previously she had sore on the lower lip which she stated had been inflamed and black. Personal and family history were negative. On *March 11th* a fine purpuric rash developed on both feet and legs up to the hips, and an extravasation of blood into each upper eye-lid; there were also several large purpuric patches scattered over the body. The temperature ran irregularly up to 103°. On *March 14th* hæmaturia and melaena developed. On the night of *March 15th*, epistaxis began from which she was badly exsanguinated by morning. Gelatin and haemostatic serum were given subcutaneously without effect. Packing the nose with adrenalin stopped the bleeding temporarily. On the afternoon of March 16th, 350 c.c. of her father's

blood (citrate method) was transfused. The transfusion was followed in 15 minutes by a sharp chill lasting about 20 minutes. As the chill started the bleeding stopped. For 24 hours she was much better in appearance. The haematoma in the upper lip had to be opened on account of suppuration. This abscess cavity started bleeding freely. From this time she steadily failed, gradually became comatose, the temperature rose to 105°, and she died during the early morning of the 20th. No autopsy.

Case II.—Male, aged 43 years, married; two children; was first seen May 9th, 1922, complaining of frequent nose-bleed extending over the last 18 months or 2 years; there had been occasional morning nausea and vomiting for the last six months. He had lost four pounds during the last 3 weeks. The family and personal history were negative. Patient had suffered from frequent attacks of epistaxis which usually had been preceded by occipital headache, and which were becoming more frequent of late. During the last 6 months he frequently became nauseated and had vomited on beginning work, but felt all right the rest of the day. He was foreman of the compound-applying machines and had been working with benzol for the last 7 years. He had a steady, little, hacking cough: no expectoration. He had been losing weight lately and tired easily. He states that his blood appeared to be rather watery. Complexion very pale, not the lemon tint of pernicious anæmia. He had been bleeding recently from the right nostril. The throat was normal. His mouth showed the presence of several old roots and devitalized teeth, and a general pyorrhoea affecting the gums. A slight mitral systolic murmur was heard over the precordial area. Blood pressure, systolic 106 and diastolic 44 mm. of mercury: lungs clear: abdomen negative: bowels regular: hæmoglobin 60% (Tallquist): erythrocytes 2,022,000 per c.mm.: leucocytes 3,200 per c.mm., color-index 1.5. A stained blood smear showed poikilocytosis, anisocytosis, vacuolation and abnormal staining of the erythrocytes. One normoblast found. He was immediately removed from the benzol fumes, and started on arsenic subcutaneously in the form of "soamin." On May 21st, the hæmoglobin was still 60%: erythrocytes 2,176,000 per c.mm.: leucocytes 3,500 per c.mm., color index 1.37. A blood smear showed the same picture as before; one megaloblast was seen. Blood drawn for a Wassermann test was very fluid and clotting time was much delayed, as the cells all settled out from the plasma before coagulation occurred. His general condition now seemed a little better. The stomach had not been disturbed since getting away from the benzol. Epistaxis had been much less frequent. He had developed three purpuric spots on arms and legs. The Wassermann report was "very strongly positive," so we started him on novarsenobenzol-Billon. He was allowed to go back to work on June 2nd but with strict instructions to keep away from the benzol. On June 19th, the haemoglobin was 75%: erythrocytes 2,632,000 per c.mm.: leucocytes 4,200 per c.mm. On July 25th the hæmoglobin was 80%: erythrocytes 4,024,000 per c.mm.: leucocytes 5,700 per c.mm.: color index 0.9. His general condition was very much better and he had had no epistaxis for over a month. On October 13th, the haemoglobin was 90%: erythrocytes 4,344,000 per c.mm.: leucocytes 5,240 per c.mm. A blood smear still showed slight tendency towards irregularities in size and shape of the erythrocytes and the large mononuclear elements were increased. The patient was looking and feeling well; there had been no epistaxis and he had put on weight. All his teeth had been extracted and he had a satisfactory fitting set of artificial ones.

Case III. occurred at the same time as Case II, under Dr. Jackson's observation. History was as follows: *Case III.*—Female aged 33 years; married, five children. First seen on May 10th, complaining of black and blue areas over lower extremities. These had been present some two weeks and were getting steadily worse. She had been working in the "dope-room" for about three months. She was well nourished. There was some bleeding from the gums. Slight pyorrhoea was present. Over the entire body, but particularly over the lower extremities, were many hæmorrhagic areas varying from petechiae to patches three inches in diameter. The urine contained no albumen, sugar, casts or pus. There were a few erythrocytes. The blood showed haemoglobin 40%; erythrocytes 2,225,000 per c.m.; leu-

cocytes 2,700 per c.mm. A blood smear showed marked crenation, poikilocytosis and degeneration of the erythrocytes but no erythroblasts. The coagulation time was markedly lengthened, as evidenced by the fact that the corpuscles settled to the bottom, leaving the clear plasma above, before coagulation occurred. Wassermann negative. Heart and lungs normal: temperature 101°. Pulse, weak, regular, rate 118. She was put to bed at once on a milk and egg diet, with calcium lactate grains X, every 4 hours. On May 13th her temperature was 102° F., pulse 118; the hæmorrhagic areas had increased in size and number; the bleeding from the gums was more pronounced. She was given 400 c.c. saline intravenously, to which was added 5 c.c. haemostatic serum. On May 15th the temperature reached 102.2°, pulse 130 with bleeding from the nose and marked headache. The leucocytes were now down to 700 per c.mm. Four hundred c.c. of saline were given intravenously and 1 c.c. haemostatic serum every six hours subcutaneously. May 17th, temperature 104°, pulse 140 and weak. She was restless and moaned a great deal. Many of the hæmorrhagic areas were being absorbed and there were very few new ones. She was given 400 c.c. solution of gum acacia, after which her temperature dropped to 101° and her pulse became stronger and slower. She was now put on a carbohydrate diet with sodium bicarbonate, 1 drachm, every three hours. On May 19th although her condition was no worse, the temperature ranging about 101° and pulse 100, she received a transfusion of 450 c.c. of citrated blood. The urine showed no acetone, no diacetic acid, a few erythrocytes, and certain crystals which were taken to be tyrosin. There were no further hæmorrhagic areas. She complained of severe headache. On May 20th, the temperature reached 105.2°, pulse 145. There were whitish patches on lips and vulva. The liver seemed smaller and the skin developed a distinct yellowish tinge. She was given 0.2 gm. novarsenobenzol-Billon intravenously followed in eight hours by 500c.c. glucose solution intravenously with 30% glucose per rectum. drip method. The patient became semi-conscious. On May 21st, the temperature was 106.3° pulse 160, respirations 40. She was then unconscious and died at 4 p.m. The terminal condition was apparently acute yellow atrophy of the liver. No autopsy.

Remarks.—About a year and a half ago a patient came under the care of one of the local practitioners. A strapping, healthy girl of about 17: she had failed markedly in general health and had become very anæmic. The doctor did not examine her blood and came to no definite conclusion as to the cause of the condition. She was working in the "dope-room" at the time. She moved away from town, and consequently from his observation. She is since dead; the cause report stated to be pneumonia. Her physician says that on looking back over her symptoms he thinks that she probably suffered at that time from benzol poisoning.

There is a vague description given by the employees at the plant of a symptom-complex shown sometimes by those coming in contact with the benzol, consisting of sleepiness, stomach disturbances, general weakness and occasionally attacks of epistaxis and purpuric spots on the extremities.

A very striking finding in Cases II. and III. was the extreme fluidity of the blood and the delayed clotting time. In both cases the corpuscles entirely settled from the plasma before clotting occurred. Case I improved considerably in general condition for a few hours following her transfusion. Case III. failed to improve after transfusion. In the first case the father acted as donor: in Case III. the donor's blood was carefully tested out against the patient's for agglutination and hæmolysis and found compatible. The citrate method was used in both cases.

Since the appearance of these cases various steps towards prevention of further trouble have been taken. The driers work in a sheet-iron enclosure which has openings for the reception and delivery of the caps. Heavy suction has been installed both below and above the machines; the caps on delivery, are carried out through an enclosed trough about eight feet long, so as to have the inspectors as far as possible from the fumes. Although the odour of benzol can still be noticed in the department, it is now very faint. Every employee in the department is given a pint of milk about 9 o'clock each morning, and its consumption is

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insisted on. Approximately every six weeks red and white blood cell counts and hæmoglobin estimations are made on every person coming in contact with the benzol. Any individuals who are not up to a reasonable standard are promptly removed to another department. Very strict orders have been given about allowing benzol to come in contact with the hands or skin. Analysis of the supply of benzol shows that it is well up to the required standard of purity. Comparisons of the safety measures in use in this plant have been made with those elsewhere and the findings leave very little to be desired.

No further cases of even a suggestive character have occurred.

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FOUR CASES OF VOLVULUS OF THE SMALL INTESTINE WITH OBSERVATIONS ON THE ETIOLOGY

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A "TWISTING of the intestines" has long served as the popular explanation for obstruction in the alimentary canal. How venerable is this view will appear when it is recalled that the very term *ileus*, used in English, French and German to denote intestinal obstruction in general, owes its origin to the Greek verb, εἱλειν, meaning "to roll or twist tight up."

With increasing knowledge this twisting or volvulus has come to be recognized as among the rarer forms of intestinal obstruction, brought about by conditions not as yet altogether satisfactorily explained. As to its frequency one may cite the records of the London Hospital, where, during a period of thirteen years, among 669 cases treated for obstruction, 27 (4%) were due to volvulus. Of these but seven involved the small intestine. In certain localities on the continent the percentage incidence appears to be very considerably higher. Among 2,315 cases of obstruction collected by continental authors, 392 or 16.9 per cent. were due to volvulus, of which about one-third involved the ileum (Guibé).

The occurrence within the space of a few months in the Montreal General Hospital of four cases involving the small intestine seems to justify their publication, especially as each case presents a feature of special interest from the view point of the etiology, the bearing of which will be considered after a brief resumé of the case histories.

CASE 1.

No. 4830—1920, male, aged 50, Hebrew, labourer, was admitted to M Service (Dr. J. Alex. Hutchison), on October 24, 1920.

History:—On admission he complained of intense abdominal pain in the left lower quadrant, with nausea and of vomiting. He had been in perfect health until the evening before admission, when after a day's fasting he partook of a very hearty meal at 9 p.m. One hour later he had considerable abdominal dis-

tress. At 11 p.m. after taking salts he became nauseated and vomited, the vomiting producing relief. At midnight the pain recurred, general, but referred especially to the left lower quadrant. He again induced vomiting, recognized food material previously ingested, and again felt relief. At 2 a.m. the pain reappeared, more severe than before, cramp-like in character and doubling him up. He came to hospital at 7.20 a.m., with pains of marked severity and looking ill. An enema brought away a large constipated stool and much flatus. Still complaining of pain, he was given a second enema, again with success.

Examination.—At 10 a.m. when seen by me, he lay in bed with his knees drawn up, obviously suffering, and occasionally crying out with pain. Temperature, 97°; pulse, 80, of good volume; respiration, 20. The abdomen was quite soft, with tenderness on both deep and superficial palpation in the umbilical region. Visible peristalsis was present to the left of the umbilicus, where an indistinct mass could be seen and felt. White cell count, 13,600. Urine, negative. While preparations for operation were being made, Dr. W. L. Barlow was asked to see the patient, and during his examination of the abdomen the mass suddenly disappeared and the patient gave an exclamation of great relief, saying, "I feel all right now." Operation was deferred. Following this he slept several hours. At 7 p.m. white cell count was 18,200. At 9 p.m. he complained of pain in the abdomen, not severe, and shortly afterwards vomited a porringer full of blood. The following morning his abdomen was still quite soft. Occasional vomiting occurred and enemas returned clear without flatus. At 10.30 a.m. white cell count, 23,200. Temperature 99.4°; pulse, 128.

Operation.—He was taken to the operating room at noon and under ether anaesthesia the abdomen was opened through a mid-line incision below the umbilicus. A quantity of deeply blood-stained fluid escaped. Collapsed small bowel presented which traced upwards to a mass lying in the left lower quadrant, in volvulus, clockwise, consisting of a loop of small bowel devitalized and extremely congested, thickened and swollen, with apparent obliteration of the lumen. There was a sharp constriction at the lower end evidently due to previous pressure. One complete turn (180°) contra-clockwise was sufficient to reduce the volvulus without subsequent improvement in the circulation of the wall, so the damaged portion was excised and an end-to-end anastomosis was made. The excess of fluid was aspirated from the pelvis and a cigarette drain left after closure. The exact level of the obstruction was not determined, but was about mid-way along the course of the small bowel.

The specimen was reported on by Dr. L. J. Rhea, pathologist to the hospital, as follows:—

"Specimen consists of a piece of small intestine 24cm. in length with fatty mesentery attached. The specimen has assumed a perfect horse-shoe shape. At both extremities the tissue is of a light reddish pink colour for a distance of about 3.0 cm. at which point it suddenly becomes dark red, showing a definite line of demarcation. The pinkish areas measure 2 cm. in diameter and the dark area 3.5 cm. From the cut ends of the intestine a thick blood-stained fluid exudes. On opening into the lumen the mucous membrane is dark red and oedematous. The demarcation between the more normal intestinal wall and the tissues involved in the volvulus is sharper at one extremity, the lower. The intestine except for a small portion at each extremity is thickened and oedematous, has lost its lustre, shows a dark red and greyish mottling, with a delicate fibrinous coating and numerous haemorrhagic points. These characters become more pronounced as the lower end of the specimen is approached. The mesentery, especially at the central part of the volvulus, shows marked thickening and changes similar to the adjacent coil. The line of excision through the mesentery and intestine is well beyond the area of devitalized tissue."

The patient made an uninterrupted recovery. On November 15th, a barium meal passed with normal emptying and with no evidence of the presence of the anastomosis. He walked home from hospital on November 17th.

Comment

The explanation of the unusual history and findings was taken to be that the original condition had been a volvulus, that this had been *partially righted* during the pre-operative manipulation, relieving to some extent the mechanical obstruction due to the twisting, but that

the extreme congestion of the loop during the twelve hours of acute strangulation had obliterated the lumen, the actual obstruction being thereby perpetuated.

That a volvulus can even partially relieve itself is contrary to the generally accepted teaching, but this conclusion seems to have some justification in the light of the findings.

Thorburn reported two cases where at operation he found similar areas of sharply localized gangrene of the small bowel which he regarded as due to volvulus which had become spontaneously reduced. Guibé who made a very exhaustive study of volvulus, lends some support to this interpretation when he concludes it to be "very probable" that spontaneous recovery may occur in a certain number of cases.

Case 2.

No. 484—1921, male, aged 31, clerk, was admitted to the Montreal General Hospital on February 1, 1921, with severe frost-bite of the extremities.

History.—The history in brief was that during a period of extremely cold weather he lost his way in the country, and unable to find shelter, wandered about for sixteen hours to be picked up semi-conscious by some Good Samaritans who cared for him and sent him by train to hospital.

Examination.—On admission a few hours later he was stuporose, answered questions with difficulty, but seemed to be in no pain. Temperature, not registered by clinical thermometer; pulse, 55. Both hands and feet gave evidence of severe frost-bite, also both knees, both ears, and the left abdominal wall. He made good progress under careful nursing but moist gangrene of the hands and feet supervened, and he became very toxic before any definite demarcation lines were established. To increase the elimination and combat the absorption forced fluids were given. On February 11th he vomited several times throughout the day. At 3 p.m. after an enema which was expelled well colored and with flatus, he complained of severe epigastric pain. Food was discontinued. The abdominal pain continued all night with much flatulence and flatus. At midnight examination of the abdomen revealed no definite tenderness, but some increased resistance. At 3 a.m. on February 12th, an enema was expelled well coloured, with flatus. At 10 a.m. the abdomen was moderately distended and so rigid as to suggest perforation or general peritonitis. His general condition was poor: temperature, 103.4°; pulse, 124; incontinence of urine.

Operation.—Operation was undertaken. A left trans-rectus incision was made. No free fluid was found. Small bowel presented, glazed, cyanotic and sticky. A high volvulus, contra-clockwise, was found comprising several loops of greatly distended small bowel within two or three feet of the duodenal-jejunal flexure. This was lying on the left side immediately subjacent to an ecchymotic patch on the abdominal wall, the site of the frost-bite. The involved gut was of a deep purple hue, but regained its colour when restored by a clockwise turn through a little more than 270 degrees. Some difficulty was found in reducing the volvulus owing to the marked distension of the coils. There was no thrombosis of the mesentery, which was of normal length. There was a distinct constriction at the upper end, above which the jejunum was empty, in fact quite collapsed. The patient bore the operation well; enemas became effectual and the vomiting did not recur, but he failed to recover from his toxaemia and succumbed the following day. No recurrence of the volvulus was found at autopsy.

Case 3.

No. 997—1921, male, aged 70, vendor of patent herb medicines, was first seen on the evening of March 9, 1921, in consultation with Dr. W. W. Ruddick.

History.—He gave a history of long standing glycosuria, and of constipation extending over the previous six months, more aggravated during the month immediately preceding, with occasional attacks of diarrhoea. There had been a loss of weight—forty pounds in two years—but increase in girth. Since March 6th constipation had been complete, despite the administration of copious doses of various patent purgative herb concoctions of which he was the dispenser and vendor. Enemas were ineffectual. Pain was not complained of, and he had no vomiting.

Examination.—The abdomen was markedly

distended and tympanitic. No tenderness was complained of. Rectal examination was negative and there were no masses palpable in the abdomen. An exploratory operation was urgently advised but stubbornly refused: he wanted to take more herbs. By the following morning the distension had further increased, the obstruction was unrelieved and he was much more toxic; operation consent was given. On admission to the hospital, examination of the blood by Dr. Rabinovitch of the Metabolism department showed: urea nitrogen, 64 mgm. per 100 c.c., and blood sugar, 0.20 per cent.

Operation.—At noon, March 10th, under open ether a left trans- rectus incision was made and disclosed a hard annular tumour of the sigmoid, obviously malignant, completely obstructing the lumen of the gut. The entire colon and lower ileum were enormously dilated. On further exploration the presence of an extensive volvulus was established. This involved the terminal four or five feet of the ileum together with the caecum, the mass twisted contra-clockwise and the bulk of it lying to the right of the ascending colon. The actual extent of torsion was difficult to estimate but seemed slightly more than 270 degrees.

The bowel involved was of a deep purplish colour, but the normal colour returned after reduction. The tumour in the sigmoid was very freely movable and no glands were palpable. A colostomy was made in the left side and a Paul's tube introduced.

After the operation vomiting appeared for the first time. It became faecal and persistent in spite of gastric lavages and other measures. The day following operation his blood urea nitrogen had dropped to 30 mgm. per 100 c.c., but the tone of the over-distended bowel failed to return. He developed a double bronchopneumonia which aided in bringing about his death.

Case 4.

No. 2020—1921, male, aged 43, construction superintendent, living in a small suburb ten miles from the city, was admitted to the Montreal General Hospital May 12, 1921.

History.—During the six months preceding admission, he had had occasional attacks of abdominal pain but had remained at work. Four days before admission he had a recurrence of the pain, cramp-like in character, and associated with vomiting. He was seen by a local practitioner who diagnosed acute gastritis, put him on a liquid diet, and gave him large doses of morphia. The following day I was asked by his employers to see him, and found him markedly tender in the right lower quadrant over the appendix; he was nauseated but had no vomiting. Operation was advised but the patient withheld consent. Two days later I was again sent for and found his condition markedly worse. On the advice of the local doctor he had taken a large dose of castor oil the night before, shortly after which he had a recurrence of the abdominal pain, much more severe than before, with persistent nausea and vomiting, but with no bowel movement.

Examination.—He was immediately transferred to hospital where on admission the pain was severe and paroxysmal, recurring every few minutes. He was nauseated and the vomiting persisted. The pupils were contracted to a pin point. The abdomen was scaphoid, resistant but not rigid, no visible peristalsis was in evidence; general tenderness present. He had had but one small stool since the onset of the illness four days before.

Operation.—Under ether a right trans-rectus incision was made. No free fluid was encountered. A large volvulus, contra-clockwise, involving the upper four-fifths of the small intestine was found and reduced by a turn through 280 degrees. The bowel was greatly distended. purplish and cyanotic but regained its colour and its peristalsis after reduction. The appendix was found acutely inflamed and swollen, especially in the distal half; it was removed. During the operation which was well borne, 1000 c.c. of normal saline were administered subcutaneously. Respiration was very slow and shallow, doubtless due to the continued effects of the morphine. The stomach was washed out until the contents returned clear. Following operation his enemas became increasingly successful, and he had no vomiting. His further progress was most satisfactory and he was discharged well on June 7th, returning to work three weeks later.

Types of Volvulus.—Rokitansky in describing the anatomic possibilities in the occurrence of volvulus described three forms:—

1. Rotation of the bowel on its own axis.

2. Rotation on the axis of the mesentery.

3. Rotation of two loops of bowel, the one on the other, an interlocking.

It will be observed that all the cases in the series are included in the second group which is by far the most frequent form.

Direction of Volvulus.—The older authorities describe the twisting as being usually clockwise, and in the proportion of two to one. In the experience of Ashhurst the contrary has been true. In our cases it will be noted that the types were equally represented.

Etiology of Volvulus.—When we come to consider the etiology of volvulus we find much diversity of view. Among the early explanations of its occurrence is that of Fienus, who in "A New and Needful Treatise of Spirits and Wind Offending Man's Body," (1668), informs us:—"So the excrements being by degrees very dry stop the passage against themselves and the wind, and cause Convolvulus sometimes, but the Colick often, and other great symptoms."

Volvulus, occurring as it does in adults, and seldom below the age of thirty, in contradistinction to intussusception, which is a disease of childhood, has long been ascribed to a lengthening of the mesentery as age advances, due to the loading of the intestinal coils and to the pull of gravity. This is undoubtedly an important factor in volvulus of the sigmoid, the site of the great majority of cases.

Virchow was the first to point out that volvulus of the pelvic colon is generally associated with abnormalities of the pelvic mesocolon, and Treves held that constipation was its most common cause. In this connection it is of interest to note the variations in length of mesentery that can occur. The author recently examined a series of some sixty abdomens in the dissecting room of McGill University and was struck with the wide diversity in the manner of attachment of the sigmoid. In five cases there was no mesosigmoid, the gut being attached to the posterior wall of the pelvis. A type in which a sigmoidostomy would have been impossible. Several had abnormally long mesenteries, and in one individual, the loop, narrow at the base, could even in the cadaver be approximated to the right costal border, exactly the type which would be expected to predispose to volvulus. The remaining cases varied between the two extremes.

Now whereas there is more or less agreement as to causes operating to produce volvulus of the sigmoid, when one seeks for explanations for the production of volvulus of the small intestine the converse is true. One has but to refer to a series of articles to find how varied are the explanations given of this very serious condition. The blame is usually placed upon the presence of adhesions, or upon abnormalities in the length of the mesentery or bowel. Frequently it is ascribed by analogy to the causes operating in the production of the more common form. Thus Nothnagel:—

"Generally speaking, the conditions that favour the development of axial rotation in the small intestine are the same as those that determine volvulus of the large intestine. In both instances the part of the mesentery that causes the rotation must be abnormally elongated between its origin and its intestinal attachment." And again:—"Abnormal length of the intestine or of parts of the mesentery favours the production of volvulus; in fact, volvulus cannot possibly occur unless such an anomaly exists."

Bowlby and Andrews in their textbook say:—"Volvulus of the small intestine in met with only in connection with previous peritonitis and adhesions of loops of bowel."

Van Hook and Kanavel in *Keen's Surgery*:—"It (volvulus) is not often found affecting the small intestine though in the presence of bands or other adhesions it may be noted."

Russell Howard, in his text-book:—"It is doubtful if a normal loop of small bowel can be so twisted, although it is not uncommon when there are adhesions joining pieces of intestine together."

Alexander Miles in *Choyce's System of Surgery*:—"There are usually adhesions which fix the gut and form an axis of rotation."

Allbutt and Rolleston are even more emphatic on the point:—"It must be clearly stated that normal small intestine and mesentery cannot undergo a pathological degree of torsion and that some congenital or acquired deformity of the mesentery, or some adhesion is necessary to render volvulus possible."

A sufficient number of authorities have been quoted to show the extent to which the blame for volvulus is placed upon structural changes. It must be admitted that cases do occur where this obtains, but are these structural

changes and anatomic variations responsible for the majority? There are grounds for believing that they are not.

One very striking feature in the incidence of volvulus which is indicated in Guibé's very exhaustive articles is the great variation in the statistics of different observers. Thus in the London Hospital series, referred to above, but four per cent. of the cases treated for intestinal obstruction were due to volvulus, approximately one-fourth of which were in the small bowel, whereas in a series of 153 cases of obstruction collected by Faltin (Helsingfors) 78 (51%) were due to volvulus, of which 22 per cent. occurred in the small bowel. A divergence of this extent cannot be explained by mere chance.

Among authors reporting a high incidence of volvulus we find the following:—

	Percentage of intestinal obstruction due to volvulus, all forms	*Relative percentage of volvulus of small intestine*
Eiselsberg at Koenigsberg	22	—
Albeck in Denmark	30	80
Rutkowski at Cracow	38	40
Bergmannat Riga	42	40
Philipowicz at Czernovitch	45	25
Faltin at Helsingfors	51	22

It will be recognized that most of these represent regions bordering the Baltic Sea peopled by Scandinavians, Finns, Russians and Poles, and it would appear that two races, the Slavs and the Scandinavians show a particular predisposition to the disease.

Kuettner and Faltin have drawn attention to the diet of these peoples, vegetarian from early childhood by reason of economic and other conditions, the diet of the Finns, for example, consisting largely of potatoes and sour bread.

Grueber and Kuettner sought an anatomic cause for this racial predisposition and believed they had evidence that the Russians have longer intestines than English, French or German subjects. Tarnetsky, Dreike and Rollssenn on the contrary were unable to establish any pertinent anatomical differences in the intestines of the various races of Europe, differences in length of bowel or of mesentery.

From these observations Guibé concludes that a bulky indigestible diet plays a very important part and that this by producing atony and chronic distension predisposes to the onset of the condition.

That disturbances in peristalsis play an important rôle, quite in the absence of anatomic abnormalities, may be illustrated by innumerable instances. Thus Strumpell records a fatal case of high volvulus ascribed to severe vomiting induced by a quack remedy for tape worm. Cases have been described following violent muscular effort, such as heavy lifting; following coughing attacks (Kuettner, Morrison); during defecation (Prutz); during micturition (Martinoff); incidental to confinement (Gottshed, Fromme, Morestin).

Stanley relates the case of a child aged five, who after a slight blow on the abdomen developed symptoms of acute obstruction, which ended in death after forty-eight hours; autopsy revealed a volvulus thirty inches from the pylorus. Hawkins describes the finding of a figure-of-eight twist of the bowel in a patient who died from acute obstruction forty-eight hours after a fall from a chair. Pennington narrates the history of a girl of eighteen who died of a twist of the ileum induced by violent exercise; and Turner tells of a boy aged seven who fell from a height of twelve feet against the pole of a boat, two coils of intestine were found in volvulus, one coil about the other.

Let us now consider the series of personal cases which form the basis of this report. It will be observed that in none of the four cases was there undue length of the mesentery nor any evidence of adhesions. A review of the case histories, however, contains certain features which stand out suggestively. In case one is the over-indulgence in a hearty, late-evening meal after a day of strict fasting, followed by the development of a volvulus well up in the small intestine; here active peristalsis in the bowel, distended above by food, collapsed below by fasting may have induced the twisting. In the second case the following explanation suggests itself—that the patch of ecchymosis on the abdominal wall was due to a frost-bite of sufficient intensity to lessen the vitality of the underlying bowel; the giving copiously of fluids in the hope of increasing the elimination of absorption products from the gangrenous extremities distended the coils, and the increased peristalsis above what was essentially an adynamic ileus threw the gut into its abnormal position. A similar explanation may suffice for the third case where, after a heavy dosage of morphine, the administration of castor

oil induced active peristalsis and led to the kinking. In the fourth case a mechanical obstruction in the sigmoid with a grossly distended colon, and an enormous amount of purgative herb remedies combined to play a corresponding rôle. The subjoined table summarizes the findings.

PROXIMAL BOWEL *Peristalsis active*	VOLVULUS	DISTAL BOWEL *Peristalsis inactive*
Case 1.—Bowel distended by heavy meal.		Bowel inactive from starvation.
Case 2.—Bowel distended with forced fluids.		Bowel paralytic from frost-bite.
Case 3.—Active purgation with castor oil.		Bowel paralytic from morphine.
Case 4.—Active purgation and bowel distension from purgative herb remedies.		Bowel mechanically obstructed by annular carcinoma.

All four cases have this in common that in each we seem to have a distal bowel inactive from one cause or another, with the proximal bowel thrown into unusual peristaltic activity, thus producing an antagonism which would appear to provide ideal conditions for the development of the torsion.

In discussing the part played by peristalsis in the production of volvulus, mention should be made of the recent investigations of Carey, the results of which may be very far-reaching. Carey has shown that in the dog, cat, sheep, cow and pig the muscular coats of the small intestine, heretofore described as inner circular and outer longitudinal, are in reality arranged in spirals, the inner coat as a very close spiral, the outer coat wound in a more elongated spiral which makes a complete turn every 20 to 50 cm. or more. This arrangement imparts a screw-like action to peristalsis. Whether the results of these investigations will shed further light on the production of volvulus remains to be seen, but they are certainly very suggestive.

Summary

A consideration of the literature and of the cases here recorded seems to justify the conclusion that we must revise our current teaching that volvulus of the small intestine can occur only in the presence of adhesions or other structural abnormalities of the intestinal tract. Greater emphasis must be placed on disordered peristaltic action, leading to a relative antagonism between adjoining segments of bowel, unequally filled.

THE EVIDENCE OF ORGANIC HEART DISEASE.*

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I HAVE selected this subject in order that I may discuss with you the evidence upon which to base a reasonably correct diagnosis of organic heart disease, in so far as it applies to patients who are not too ill to consult you in your office. On this basis I shall not refer to acute inflammatory affections such as carditis, endocarditis and pericarditis, nor to cases of severe heart failure, both of which groups offer no special difficulty in the recognition of the cardiac factor, although individual features of the case may offer diagnostic difficulties. I do not propose to deal with the subject exhaustively, nor to deal with the evidence which differentiates the various heart lesions from one another. I shall simply attempt to assist you in answering one question—does organic disease exist, or does it not? This is the chief difficulty to be overcome by the general practitioner, and I wish to consider and weigh the evidence from his standpoint. Upon him rests and always will rest, the great responsibility of giving common sense advice to ninety-nine out of every hundred patients, who seek medical help for symptoms of heart disease, real or fancied.

In military practice, we had much statistical information of the importance of cardiac cases

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from the standpoint of numbers. Lung cases formed the largest medical group, and heart cases formed the second largest group, and errors in diagnosis were very numerous. In civil practice we may safely state, even in the absence of statistics, that heart cases form a large and puzzling group.

No question is heard more frequently in the consulting room than, "Doctor, how is my heart?" The following quotation from Sir William Osler's monogram on Angina Pectoris, while made in reference to Angina Pectoris, applies equally well to heart cases in general. He says, "There is no group of cases so calculated to keep one in a condition of wholesome humility. When you jostle against a hale, vigorous specimen of humanity, who claps you on the back and says, 'The deuce take you doctors, I have scarcely yet got over my fright,' you would like to forget that five years before, you had almost signed his death warrant in a very positive diagnosis of Angina Pectoris vera. On the other hand, Mr. X. has left you with a full assurance that his cardiac pains are due to overwork or tobacco, and you have comforted his wife, and lifted a weight of sorrow from both, by your favourable prognosis. With what sort of an appetite can you eat your breakfast, when one week later you read in the morning paper the announcement of his sudden death in a railway station. Or take another aspect, poor Mrs. Doe has gone softly all these years in the bitterness of her soul, since you took that grave view of her vasomotor or hysterical angina." The question of organic heart disease is one of the greatest importance, and has to do not only with the welfare of patients, but in a very real sense with the reputation of physicians, and is worthy of serious attention. I shall therefore attempt to point out some of the pitfalls which lie in the path of the diagnostician in his efforts to make as few mistakes as possible.

We have all experienced the humiliation which accompanies a tumble on a slippery sidewalk. I know of no stronger incentive to make one walk cautiously in future. The desire to walk upright is intensified if the fall happens to have been witnessed by our intimate friends. In the diagnosis of disease, nothing compels one to exercise increased care more than a diagnostic tumble. Here again, the greatest stimulus is at work when our colleagues have witnessed the fall. In both cases there are those who look on with amusement, those who find pleasure in kicking you in the ribs, and those who lend a helping hand, and help to soothe the sting of the fall. Much can be learned from the survey of the more common diagnostic errors. It is convenient to consider them in two groups. The errors in the first group are due to a failure to recognize signs and symptoms which have a high value in diagnosis, and they result in a failure to diagnose disease when it is actually present. The points to emphasize are as follows:

1. *Diastolic Murmurs.*—Many of these are missed because they are low pitched. In acoustic terms, they are near the lower border of audibility, and are exceedingly difficult to hear.

2. *Presystolic Murmurs.*—Some of these are not properly timed by the observer. Others escape notice on account of low pitch and short duration. In both cases the difficulty is overcome in a measure by examining the patient in a very quiet place, by asking the patient to hold his breath, preferably at the end of expiration, and by examining the patient in various positions, sitting, lying, standing, after exercise and on the left side. These murmurs have such a high value as evidence of organic disease, that their recognition is very important. They are so seldom functional, that in practice they should always be regarded as organic. They may be heard at one time and not at another, a feature which has been erroneously regarded as evidence of a functional nature. One positive finding is worth more than several negative findings, provided that the abnormal sounds are unmistakable, and are not located in the end of the stethoscope, or in the cerebral cortex of the observer.

3. Symptoms such as breathlessness, præcordial pain, fatigue in those past middle life. The absence of physical signs often puts one off the track, when a careful analysis of subjective symptoms permits of no other explanation than a cardiac one.

The errors in the second group result in a diagnosis of organic disease when it does not exist. They are due to wrong and excessive values being placed on certain signs and symptoms. This is probably the larger group, and

in many respects the more serious. It is exceedingly common to meet patients who have been told by physicians that they have heart disease of varying degrees of seriousness, and a careful weighing of evidence reveals that no disease is present. The effect on the patient is often disastrous, and results in a state of semi-invalidism, due in part to suggestion, and in part to the fact that the patient is deprived of the benefits of exercise incident to sport, or the activities of a normal healthy life. It should be noted in passing, that such a patient will be cured of his symptoms, if he be convinced, not merely told, that there is nothing radically wrong. The points to emphasize in this group are as follows:

1. Systolic murmurs. There is no doubt that systolic murmurs are frequently present in normal hearts, and this statement is borne out by numerous post-mortem observations. It has been said with some degree of authority, that fifty per cent. of such murmurs are not due to organic causes. It is little wonder that they are responsible for bitter controversy and injustice, especially in life insurance work and pension adjustments, when in the hands of many physicians, a murmur or other abnormal sound is always interpreted as evidence of organic disease. How can we solve this dilemma? There are two helpful rules—First, regard all systolic murmurs in the pulmonary area or with maximum intensity in that area as not organic in the absence of signs of congenital heart disease; Second, if the murmur is heard in mitral or aortic area, look carefully for other signs of organic disease such as hypertrophy, thrills, diastolic and presystolic murmurs, œdema and other signs of heart failure; also inquire for a history of rheumatic fever, and base your opinion, not on the systolic murmur, but on the other evidence present.

2. Irregularities which disappear with exercise are either premature beats or sinus arrhythmias, and do not indicate organic disease.

3. A diffuse impulse is often seen in nervous individuals, and is frequently regarded wrongly as evidence of dilatation.

4. Symptoms such as pain over heart, palpitation, breathlessness, syncope, weakness in young people, are frequently wrongly interpreted as evidence of organic disease.

5. Myocarditis and fatty heart are often diagnosed on insufficient evidence.

Other points might be mentioned here but these are the most common.

It may be profitable to dwell for a moment on the causes of these diagnostic errors:

1. Imperfect knowledge of the fundamentals of diagnosis accounts for many, and the remedy is obvious.

2. Hasty and imperfect examinations in the hurry and flurry of a busy professional life, result in a failure to collect all the data, and are responsible for errors in the hands of those who are quite familiar with the essentials of diagnosis.

3. Lack of confidence in findings is a common cause in early years of practice, and is overcome only by experience. In a certain type of diagnostician, there is also a false confidence or cock-sureness, which leads one into the most absurd errors. Inexperienced observers often hear sounds which do not exist.

4. Lack of standards for estimating the degrees of hypertrophy, for measuring the intensity of heart sounds, and for measuring the strength of the apex beat, is a difficulty for which we are not to blame.

5. The assessing of signs and symptoms at a wrong value is overcome only by reasonable familiarity with the whole subject of heart disease.

6. Another factor is psychological, and is explained by noting what happens in a game of chess. One may ponder over the board for a long time, seeking a solution of some problem, and allow a piece to be seriously threatened before one's eyes.

Similarly, in the more complex game of diagnosis, a simple and fundamental point is sometimes ignored while one has his vision focussed on some other feature of the case. How often have we heard of the organic heart treated for tuberculosis in a sanitorium, or the tuberculous patient treated for neurasthenia, or the tabetic operated on for gastric ulcer, when the evidence is staring the diagnostician in the face.

We may now pass on to the consideration of the most reliable evidence of organic disease. It consists of certain signs and symptoms which have been correlated with pathological findings, checked up repeatedly by many observers, and have been handed to us with a certain value.

which is seldom an absolute value, and in some cases permit of different interpretations. It should be remembered that the man who can make one hundred per cent of correct diagnoses has not yet been born, and the goal to be attained is a high percentage of correct ones. It is convenient to divide the evidence into two groups, first that which should be assessed at a high value, and second that which should be assessed at a low value. In the first group are placed:

1. Hypertrophy, which in turn is based on (a) position of apex beat, (b) left border of heart, (c) forcible apex beat, (d) orthodiagram, (e) presence of other signs of organic disease.

2. Diastolic and presystolic murmurs are organic in ninety-eight per cent. of cases. A pulmonary or Graham Steele murmur is a rare finding, and this illustrates a principle that if any sign is organic in a high, say ninety-five per cent., and functional in say five per cent., it should be assumed to be organic unless the evidence to the contrary is very strong.

3. Irregularities which are maintained after exercise are due to fibrillation.

4. A pulse rate of thirty-five or under, means heart block or Stokes-Adams' syndrome.

5. Angina Pectoris vera should be assessed high.

6. Signs of definite failure such as œdema, orthopnœa, venous engorgement, enlarged liver.

7. High blood pressure, one hundred and eighty or over, carries with it a diagnosis of cardiosclerosis.

8. Thrills, if definite.

9. Pulsus alternans, Cheyne-Stokes breathing, paroxysmal tachycardia.

10. Definite clinical pictures such as aneurysm, endocarditis, congenital disease. A history of rheumatic fever or of syphilis are valuable supporting evidence.

The following signs should be assessed at a low value: Systolic murmurs; reduplication, accentuation and feebleness of heart sounds; diffuse impulse; irregularities which disappear with exercise; exocardial sounds or sounds of doubtful origin; moderate rises in blood pressure; symptoms which constitute the effort syndrome; syncope, usually not due to heart; palpitation; pallor; cyanosis, due to many extra cardiac causes; bradycardia and tachycardia.

A sign in group (1) should be capable of demonstration, if not, it should be placed in group (2) for assessment purposes. A diagnosis is seldom made on one sign alone. Some reference should be made to the part played by special instruments in furnishing evidence of organic disease. The important ones are the polygraph, the electrocardiograph and the orthodiagraph. All these have a prominent place in cardiac diagnosis, but it is important for the general practitioner to know how near he can get to correct values without these special aids. In recent years, it is rare to find in the current medical publications, an article on heart disease, which is not clothed in electrocardiographic language, only intelligible to the few who are familiar with electrocardiographic work. Of the eight thousand physicians in Canada, it is safe to state that not more than eighty, or one per cent. can follow with any degree of profit, the clinical deductions of the electrocardiographer. What about the other ninety-nine per cent? This equipment is not, nor ever will be, available to them, nor will the benefits which they confer, be directly available to ninety-nine per cent. of people who suffer from heart disease. Consequently we should know how far we can travel without them. I do not wish to give the impression that I undervalue these instruments. They have contributed a great deal to our accurate knowledge of certain heart conditions, and rank among the most ingenious contrivances which modern medicine has discovered. In many cases, however, they have enabled us to associate certain conditions with signs and symptoms in such a manner that we can recognize them with confidence without their aid. Auricular fibrillation can be recognized in ninety per cent. of cases, or more, by bedside evidence. Complete heart-block is easily recognized in most cases. No one has emphasized more clearly than Sir Thomas Lewis himself, that the practical problems of cardiology must be solved by the application of rules which can be used by general practitioners. In Colchester, where all this equipment was available, it was only resorted to in a small percentage of cases. Whatever has been accomplished by these special methods in the way of benefits to heart sufferers must be dispensed through the medium of the general practitioner.

XUM

The following points may be relied upon to enable the general practitioner to recognize the various irregularities without special instruments of precision:

1.—*Sinus Irregularity*:

Seen in young people—under thirty.
Beats equal in volume but not in time.
Radial and apex beats correspond.
Disappears with exercise.
The irregularity repeats itself in a regular manner.

2.—*Premature Beats of Extra Systoles*: *Common.*

Dropped beat at radial pulse.
A premature beat heard at apex during pause.
Disappears with exercise.
May be described by patient.

3.—*Heart Block*: *Rare.*

(a) Partial.
Dropped beat at radial pulse.
Complete silence during pause.
Not affected by exercise.

(b) Complete.
Slow pulse, thirty—thirty-six.
Attacks of loss of consciousness.
Epileptiform convulsions.

4.—*Paroxysmal Tachycardia*:

Abrupt onset of rapid regular rhythm, which lasts for a variable time—a few seconds to many hours. Abrupt restoration to normal rate.

5.—*Pulsus Alternans*:

Every second beat feeble, but no change in rhythm; seen only in cardio-renal disease.

6.—*Auricular Fibrillation*:

The beats are unequal in time and volume.
If this irregularity is associated with signs of definite heart failure, the diagnosis may be made with confidence.
If no heart failure is present, give patient sufficient exercise to increase rate to one hundred and twenty or more. If irregularity is maintained, the diagnosis may be made with confidence.

7.—*Auricular Flutter*:

A persistent rapid regular rate with signs of heart failure in absence of extra cardiac causes such as fever, may be flutter. This is so difficult to recognize by simple methods that it is probably better not to attempt to diagnose it. The cases will then fall into fibrillation group, or be treated as cases of failure.

This concludes my survey of the evidence of organic heart disease. Attention to the above points will permit a very high percentage of correct diagnoses.

Let me again emphasize the central thought in my mind. It is, that in the very nature of things, the general practitioner is responsible for the care of ninety-nine per cent. of the cardiac patients, and he should be familiar with the evidences of disease which is easily within his reach. He should realize that he is able to assess values correctly in a surprisingly high percentage of cases, and that he must not allow his mental vision to be blurred by the dazzling brilliance of modern laboratory methods. He must take advantage of all which these special methods have to offer, but not allow them to supersede the simple clinical methods, especially when the latter are the only methods available.

Acute Pancreatitis in Children.—Horace B. Anderson, Johnstown, Pa., reports a case which he regards as unique in that (a) it is a case of acute haemorrhagic pancreatitis in a child, aged four years; (b) there were no lesions of the gall bladder or biliary passages; (c) there was a well defined cirrhosis of the liver, and (d) there was a well defined acute duodenitis present. The child was admitted to the hospital because of pain in the abdomen, vomiting and constipation. Two days previously, the child ate a dinner consisting largely of cabbage, but went to bed that night apparently in normal health. At 4 a.m., she complained of abdominal pain, and soon she began vomiting. The vomitus contained food particles eaten the day before. A physician at 9 a.m. found the child very ill, but without much fever. He prescribed cathartics and something to ease the pain. The child became progressively worse: the abdomen became more distended and rigid, and vomiting continued. She did not have a bowel movement for two days. The patient had one bowel movement, consisting of a dark bluish, semiliquid material, just before she died, one hour after admission to the hospital. While in the hospital the temperature was subnormal, the pulse very weak and rapid, and respirations accelerated.—*Jour. Am. Med. Assoc.*, April 21, 1923.

IMMUNITY IN TUBERCULOSIS

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IN presenting some of the facts, theories and hypotheses in reference to immunity and the tubercle bacillus, one is struck by the many contradictory conclusions different investigators have come to in the past in interpreting the same phenomenon. The subject is full of pitfalls and while a few facts are apparently well established, no one can as yet be dogmatic on the subject.

Natural Immunity—No mammal is, as far as is known, absolutely immune to tuberculosis. Some are more susceptible than others, *e.g.* cows and pigs are much more susceptible than horses and goats, but all can be infected with the tubercle bacillus if introduced in sufficient dosage. It has been tried at different times to transfer this natural immunity by injecting serum of relatively immune animals into animals less immune. So far this has never proved successful, that is, immunity cannot be transferred from one animal to another in this way.

Racial Immunity—Aboriginal tribes are, as is well known, more susceptible to tuberculosis than the white races. The question here is, of course, one of early exposure to infection *versus* no exposure and will be discussed under "acquired immunity," but various white races seem to show varying degrees of susceptibility. Italians and Jews are less susceptible than Irish or Swedes. The Framingham survey showed that while the incidence of tuberculous disease, either active or arrested, was about 2% in the general population, the Italians showed an incidence of 0.5% and the Irish about 5%. Is it because of the prolonged exposure to tuberculosis that this immunity has developed among the Italians? If this were so one would think that the children with a family history of tuberculosis would be more immune than those with none. Yet Raymond Pearl has shown that the person with a family history of tuberculosis is six times more likely to develop tuberculosis than the average population. With regard to racial immunity the figures of Cummings in regard to the incidence of tuberculosis among native troops in France in contrast to its incidence among the British soldiers are most interesting and instructive.

Cummings' statistics show in a very striking manner that individuals from countries where tuberculosis is rare, exhibit, when exposed to infection, a susceptibility incomparably greater than that of individuals from countries where the disease has long been widely prevalent.

The British troops in France in 1917 and 1918 had an average strength of over 1,500,000.

Total number of cases of tuberculosis in 1917—1,660
Total number of deaths—91
Total number of cases of tuberculosis in 1918—1,221
Total number of deaths—74

The total average strength of Cape Boys and Kaffirs was 11,000.

Total number of cases of tuberculosis in 1917—156
Total number of deaths—69
Total number of cases of tuberculosis in 1918—174
Total number of deaths—113

That is, there were thirteen times as many cases developed among Kaffirs and Cape Boys as among the British troops. The contrast of fatal cases was equally striking. 165 deaths from 2,881 cases, or 5.7% mortality amongst the British; 183 deaths from 327 cases, or 56% mortality amongst the Africans.

Another fact is important, namely that the type of tuberculosis found amongst the native troops was what might be styled the infantile type; *i.e.* a fulminating pneumonic and caseating tuberculosis, or miliary tuberculosis such as is found in infants below two years of age dying of tuberculosis. These figures have, of course, a definite bearing upon the subject of acquired immunity.

Acquired Immunity—In the ten years succeeding the discovery of the tubercle bacillus by R. Koch, an immense amount of work was done by various workers, especially in Europe, in an effort to produce immunity to tuberculosis. In 1886, Marfan, a Frenchman, in a paper entitled, "Concerning the Immunity con-

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ferred by the cure of a Local Tuberculous process against Pulmonary Phthisis," maintained that people, who had completely recovered from tuberculous disease of the lymph nodes, or who showed entirely healed scars of lupus, never fell ill with pulmonary tuberculosis. In August, 1890, Robert Koch announced the discovery of what was first known as "Koch's lymph" and afterwards given the name "Tuberculin."

In his first communication Koch gave no description whatever of his remarkable remedy. He merely said that it was "a substance which, when inoculated into a guinea pig, renders this animal insusceptible to inoculation of the tuberculous virus. This same substance, in guinea pigs that are already afflicted with advanced and generalized tuberculosis, brings about a complete arrest of the development of the disease although the animal organism does not suffer the least harmful effect under the influence of the remedy." Purposefully or otherwise, Koch invested what if true would have been the greatest discovery in the history of medicine with a great deal of secrecy and mystery, and left the world in complete ignorance of the origin and constitution of his remedy. A few months later he published a more detailed description of it and of its effects. It was a clear, brown liquid that was easy to keep although dilutions of it would deteriorate unless these were made in a special way. Koch then went on to describe how it should be administered to man and animals, and described the effects it produced in both the healthy and the tuberculous.

"The excitement that followed this astonishing announcement was extreme. Medical men from all over the civilized world flocked to Berlin to witness the effect of the remedy and to obtain some for their own use if possible. A thousand dollars were freely offered for a bottle which contained about a teaspoonful, and the substance could not be procured at that price from those who had been fortunate enough to secure some. Crowds paraded the streets of Berlin chanting rhymes in Koch's honour and shouting his name." . . . . .

"It was August 4, 1890, when Koch announced that by the use of a secret and undescribed substance he had been successful in producing a cure for tuberculosis and in immunizing animals against further infection. It was November 22, 1890, when Trudeau announced in the *Medical Record* that he could not immunize animals against tuberculous infection with the filtered and sterilized cultures of tubercle bacilli. Trudeau published every detail of the preparation of his materials that were used for immunization. As was discovered later, there was no essential difference between Koch's substance and Trudeau's. Yet one man had made remarkable claims while the other confessed that in his hands the substance did not have the desired effect. Trudeau published negative results and his paper was passed over without notice, Koch made startling, positive assertions and his announcement created a furore," (A. K. Krause).*

Koch's phenomena—Koch, in his experiments with tuberculin and with the effect of re-infection of animals already tuberculous, made a very important observation. This is known as Koch's phenomena. "If," says Koch, "one inoculates a healthy guinea pig with a pure culture of tubercle bacilli, then, as a rule, the wound closes over and within the first few days seems to heal. In the course of from ten to fourteen days a hard nodule arises which soon breaks down and, until the animal's death, forms an ulcerating point. But the case is totally different if one re-inoculates a guinea pig that is already tuberculous. Best suited for such a purpose are animals that from four to six weeks before had been inoculated with positive results. In such an animal the small inoculation wound closes over at first; but no nodule forms and on the second or third day there takes place a peculiar alteration at the point of inoculation. This becomes hard and assumes a dark colour; and this condition is limited not to the point of inoculation itself, but extends out into the neighbourhood for a distance of about 1 cubic centimeter in diameter. In the succeeding days it becomes even plainer that this changed skin is necrotic; finally, it shoughs and a shallow ulcer remains which as a rule heals quickly and permanently without infection of the regional lymph nodes."

The importance of this observation lies in the fact that animals already tuberculous react in an entirely different way to a second infec-

*A. K. Krause—"Essay on Tuberculosis," *Journal of Outdoor Life*—p. 129, May, 1919.

tion. The importance of this observation was not apparently realized by Koch whose head was apparently filled with the possibilities of tuberculin. Others did realize the importance of this fact. In 1894, Trudeau and de Schweinitz experimenting on rabbits, produced immunity in them to virulent human tubercle bacilli by a previous inoculation with a culture of avirulent (R) living tubercle bacilli. R1 culture is a culture of an avirulent strain of human tubercle bacilli that was grown by Trudeau many years ago and is a standard avirulent strain used in laboratory work in many laboratories still. Why it became avirulent has never been explained. In 1897, Trudeau reported his work with R1 tubercle bacilli to the British Medical Association at Montreal. He showed that thirty-six animals unprotected by previous R1 inoculation, but inoculated with virulent human bacilli lived on an average 57.2 days. Sixty-six animals, receiving previously a protecting inoculation with R1 and then injected with virulent tubercle bacilli, lived an average of 154.3 days. Since then better results than this have been obtained.

About the time of Trudeau's work and in the ten years following it, an enormous amount of work was done by many investigators with various acid-fast organisms. There are three forms of pathogenic acid-fast tubercle bacilli, *viz.* human, bovine, and avian. There are besides these, a large number of acid-fast organisms which are non-pathogenic, found in hay, dung, and various cold-blooded animals such as ground worms, turtles, fishes, etc. It was thought possible, and some experiments seemed at first to prove it, that there might be a transmutation from one form to another. More careful observation has shown that there is no such thing as transmutation. It was shown by Koch that animals infected with repeated doses of dead human bacilli would agglutinate any acid-fast bacillus. Tuberculous guinea pigs will show a positive skin test to extracts of grass, milk, dung and butter bacilli. The so-called immune bodies, *viz.* precipitins, agglutinins, aggressins, opsonins and complement fixing bodies have little to do with immunity to tuberculosis. These bodies can all be formed in the serum of animals after giving repeated doses of tuberculin, yet these non-infected animals, no matter how much tuberculin they have received, show no immunity to tuberculosis.

The work of Alf Moeller with living acid-fast bacilli is most interesting. Moeller believed that non-pathogenic acid-fast bacilli would produce immunity against pathogenic tubercle bacilli. He inoculated himself with the blind worm bacillus at 6 to 11 day intervals. After a few weeks he inoculated himself with a 50th of a loop of living virulent tubercle bacilli. He produced no reaction. In the next two months he lost 15 lbs. which he gradually regained, but he did not develop any clinical tuberculosis. Moeller's work, repeated on animals, did not show that any absolute immunity could be conferred, though there is some evidence that there was a less severe type of the disease. Moeller later abandoned this method of immunization as unfruitful; it was afterwards taken up by Friedman to his great financial benefit, though without any benefit to the patients who parted with their cash.

Behring's Bovo-Vaccine—In 1901, Behring vaccinated cattle with living, dried, human bacilli and produced an immunity to bovine tuberculosis. This was tried on thousands of cattle. The cattle became no doubt immune, but the immunity did not last longer than two years. Results were very variable, possibly because the tubercle bacillus in some of the various lots of the vaccine were dead.

Koch's Tauraman—This was a modification of Behring's method. Cattle upon whom it had been used became resistant to a large single inoculated dose of virulent tubercle bacilli, but became infected when exposed to tubercle bacilli in the natural way.

Calmette's work—The recent work of Calmette upon cattle has resulted in what is probably the most satisfactory immunity yet produced. He has produced an immunity by the vaccination of calves with living tubercle bacilli, which immunity has lasted for a number of years. His further work will be watched with much interest.

All the above leads us to the following conclusions. No satisfactory immunity has ever been obtained from: (1) Dead tubercle bacilli of any type; (2) Living bacilli of as low a virulence for mammals as are avian bacilli; (3) Living or dead non-pathogenic acid-fast bacilli; (4) Tubercle bacilli changed by physical, chem-

ical or biological agents; (5) Soluble or insoluble derivatives of the tubercle bacilli. (dogs, goats, etc.) or the serum of those artificially treated with tubercle bacilli, or derivative of these.

Conclusion—Only the tuberculous are immune. This conclusion that the only ones who show an immunity are those who carry living tubercle is borne out by the observation of Cummings on native *versus* British soldiers. It is also borne out by observation of the Von Pirquet test. Tuberculosis is a very fatal disease in children below two years of age. Children, as a rule at this age, exhibit a negative Von Pirquet reaction showing they have not as yet received their early protective inoculation. Tuberculosis diminishes in fatality as chances of small infection occur. It does not, however, explain why the most immune period of life is from five to fifteen years, while the incidence of tuberculosis increases at about eighteen to twenty years.

Another rather interesting fact in connection with the Von Pirquet test is that it disappears during infectious diseases, *e.g.* measles, in which the resistance is lowered. It is probable that relative immunity varies a great deal, depending on such factors as acute infections, etc. It is also evident that immunity from tuberculosis is not a humoral affair but rather resident in the cells; Allergy or sensitiveness to tuberculin is evidently humoral, but the development of the precipitins, agglutins, etc., has evidently little to do with our resistance to the disease.

In the study of immunity to tuberculosis it is possible we have been paying too much attention to the tubercle bacillus. It has been shown that the toxæmia of tuberculosis is not altogether due to the poisons of the tubercle bacillus, but rather due to the absorption of minute quantities of caseous or necrotic tissue. The symptoms of tuberculosis may be produced by the absorption of these non-specific poisons. The tubercle bacillus or the products of the growth of the tubercle bacillus in some way produces caseation. The absorption of these caseous products produces the disease and lowers the general resistance so that the tubercle bacillus is able to produce more caseous areas. The question remains: "Is the solution of immunity to tuberculosis to be found in something that will produce an immunity to the products of caseation, non-specific in its character?"

THE PSYCHOLOGY OF NEUROSES

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PERHAPS the greatest difficulty for the general practitioner, in approaching the study of neuroses, can be traced to the lack of agreement among psychiatrists as to what clinical disorders should be grouped under the heading of "neuroses." The terms used to denote the neuroses, hysteria, neurasthenia, psychasthenia, anxiety neuroses and even those applied to the two main groups, neuroses and psychoneuroses, have no uniformly accepted connotations. Every description of these "diseases" draws in, sooner or later, some theory which determines the symptomatology, *e.g.*, a dissociation theory, a conflict theory, a toxin theory, an endocrinogenic theory, a degeneration theory, an autonomic disorder theory; each one supported by some facts, each one apparently insufficient to account for all of them. In the face of this, it is not to be wondered that the practitioner becomes alarmed at the range of the requisite diagnosis or that he is led to consider that each of the neuroses is protean, with each part of the disorder requiring separate treatment. This is probably one of the facts which have kept him from attempting to deal with these diseases, and have forced him to leave the treatment to the specialist.

Certainly the backward state of psychother-

apy cannot be attributed to a dearth of clinical material. Jones contends that neuroses are probably more frequent than any other form of disease. The victims have not usually been called "sick" people, however; they have been known as the drug addicts, the sexual perverts, the kleptomaniacs, the recidivists, as misfits who are unable to adjust themselves to society; or as malingerers. The physician has regarded them merely as social incompetents, and has only recently come to recognize that such disorders were the natural outcome of certain causes which could be discovered and removed by scientific methods. He has accepted the assertions of these people, that they did not know why they did these things, as indicating that there was no cause. They have been known to him, sometimes, as chronic patients, whose ills seemed to cover the whole organic system, but for whom the diagnosis was always negative. Without a doubt the failure of the physician to recognize the real nature of the trouble has reacted to his own detriment, inasmuch as the charlatan, less careful about possible organic complications, less handicapped by devotion to scientific truth has succeeded where the former has failed. The purpose of this paper is to present certain facts of normal and abnormal psychology which will orient the physician in his approach to mental disease.

Out of the complexity of the symptomatology of neurotics we may note the following forms of behaviour as fairly constant:

1.—Disproportionate emotional reaction: the patient seems excited or depressed over some experience, and yet there does not seem to be any sufficient cause in the situation described by the patient. Thus one will experience fear, almost amounting to dread or horror, on hearing church bells ring, or when left alone in a darkened room.

2.—The patient complains of disturbed and restless sleep, often troubled by dreams of a terrifying or foolish nature, of fears and worries from which he cannot rid himself; of the origin of these he can give no account.

3.—There may be physical anomalies of various sorts, such as hemiplegia, blindness, deafness, mutism, anaesthesia, more or less well-localized pains, etc.

4.—The symptoms are unstable and variable. Treatment may be proceeding favourably and physical noxae be almost removed, only to reappear in some other form; for example, visual anaesthesia may be replaced by aphonia.

5.—There is often, in the patient, some mental force which is striving against recovery, or, as we may say, there is "resistance." The patient will rarely agree that this is so, but it is a fact with which all practitioners are familiar. A patient will have important engagements which keep him from meeting his physician; he forgets the doctor's prescriptions, and so on, until the latter feels like accusing the patient of being anxious not to recover.

These symptoms are common to almost all neuroses, though, of course, one or two may be dominant in any particular case. They are all psychological factors and our problem is to account for their appearance in terms of normal or abnormal psychology. If this can be accomplished, then we may expect to find psychological agents of most direct use in the treatment of such disorders.

There are five well known and generally accepted psychological facts which must be adduced to enable us to understand the etiology of neuroses.

1.—*Cause and effect operate as completely and as uniformly in the mental as in the physical world.* This idea, that no mental fact appears without cause, is one for whose clearest enunciation and demonstration we are indebted to the schools of Freud and Jung. Inability to recall a name, errors in writing well known words, failure to recognize our friends, are facts which now, for the first time, are satisfactorily accounted for. Hitherto the explanation has been in terms of some physical analogue, *e.g.* an "overburdened" memory, "slips" of the tongue, or in terms of an assumed heightened synaptic resistance. The insuperable difficulty with the latter theory has been to account for this phenomenon itself; there seems to be no neurological reason why the synapse should show such variability and irregularity in functions, and especially no reason why that particular group of synaptic connections, and not others, should be modified at that particular time.

It is a matter of considerable difficulty, for one who has not made a fairly extensive study of both the normal and abnormal phenomena of mental life, to realize that the evidence is overwhelming in support of a thesis that there are

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no more accidents in mental processes than occur in any other biological process. This statement does not deny the relatively greater freedom of man's mental life as compared with that of the lower organisms, but it postulates a freedom under law, instead of lawlessness; it substitutes system and order for caprice. These laws are not all known as yet, but enough evidence is available to warrant us in taking the contention made at the beginning of this paragraph as a scientific hypothesis.

If every idea, every emotion, every fancy, every creative act, such as the painting of a picture, is caused by discoverable factors, it then becomes the task of the phychologist to discover the origins, and he does not search far before he finds it necessary to acknowledge that the individual cannot normally give a satisfactory account of all of them. If there is a cause, it must be one of whose existence the individual is unaware or unconscious. If, then, he will hypnotize the patient he may discover that ideas which had apparently disappeared entirely, can be recalled, and thus he may discover facts which will explain the phenomenon.

Each of the characteristics of the neurotic noted above, has, then, an explanation. The emotion is not really disproportionate for the person who shows it; and we call it so only because we do not know all that the situation means to the patient. The terrifying dreams have a sufficient cause somewhere, if it can be discovered; the unstable physical stigmata are so, because of some reason which the physician must disclose, and resistance is a definite response to some situation, perhaps one unknown to either physician or patient.

2.—*No experience is ever entirely lost except through organic causes.* This is another assertion which seems to be contradicted by personal experience. But the difficulty exists only for those who try to narrow life down to those processes and states of which we are conscious. All of us are familiar with the fact that remembering a fact, such as a name, a date, a prescription, is not sometimes possible at will. Ideas seem to be so completely gone that we are unable to recall the name, and yet we know it is not lost; it is on the tip of the tongue, and we believe that it will come back, or that we should recognize it if we heard it. At other times ideas flash into the minds for which we have been searching unsuccessfully for days.

Normally, recall takes place in accordance with the well known principles of association. We think of the name of a certain disease, this recalls the name of a patient who was afflicted in this way, then we start on a long chain of thoughts relative to this individual, his private life, his habits, some mutual friends of ours, and so on. The seeming irregularity of the appearance of these ideas is only apparent; in reality, each successive idea appears when and where it does because it is somehow connected or associated with the idea or experience immediately preceding it. Ideas tend, then, to become organized into groups or systems. The significance of this tendency to our study lies in the fact that ideas which we cannot recall, *per se*, may be recalled by first allowing to pass in review ideas which are somehow linked up with them. This fact of recall through "free association" is the basis of one of the best known methods of psychoanalysis.

But we must recognize that there are some experiences which we seem to be incapable of recalling, even by the use of the association process. Our memory for the events of infancy is a well-known instance; our memory for dreams is likewise very inadequate. Such ideas, not readily revivable, are styled "dissociated." Ordinarily, these dissociated ideas show no independent organization, but in a few cases of great clinical importance they become fused into a separate personality which alternates with the normal one, showing different character traits, different moral and intellectual status, and different habits of life. (The case of Miss Beauchamp reported in full by Dr. Morton Prince in a book entitled "*The Dissociation of a Personality,*" is the most complete case study of this type of disorder. Dr. Jekyll and Mr. Hyde is a parallel in fiction). Such facts seem to require the postulation of an unconscious. With regard to the neurotic, all that we need note is that the origin of the disorders may be difficult to reall, because dissociated, and that certain special methods will need to be used to discover the unconscious factors at work.

3.—The third fact is one which is just now receiving its proper attention in normal psychology. It is becoming recognized that both in normal and abnormal minds the emotional

accompaniments of ideas determine not only whether we shall recall them, but also how we shall conduct ourselves when they do come into consciousness. Freud and Jung have contended vigourously that the task of the psychologist is not to explain why we remember, since this is a natural function of nerve process, but why we forget, and their researches have led them to believe that the cause of forgetting is the association of the forgotten idea with some emotional experience. Barring organic causes, then, they would say that we forget something because it is emotionally unpleasant, because, therefore, we wish to forget it. This unpleasantness might be due to the fact that society had caused undesirable consequences to follow the expression of these ideas. To the emotionally toned system of ideas psychoanalysts give the name "complex." To the process of actively putting complexes out of consciousness they give the name "repression." Complexes are repressed into the unconscious.

4.—The fourth principle to be noted is that *all mental processes are dynamic, i.e.* they tend to express themselves in action. A simple example may be taken. As we listen to a dispute we find an idea or group of ideas forming themselves in our minds, perhaps the idea that the disputants should be separated. Quite involuntarily we may find that we push ourselves between the two. In the court room we find the lawyer watching not only the responses of the witness, but the more subtle language of his facial and general bodily movements. The interrogator believes, quite correctly, that the witness will often refute, by becoming flushed or pale, or by nervous movements, what seems to be reliable testimony. The witness is not aware that he has done these things, and would have prevented them had he been able to do so. They are, however, the expression of ideas, or attitudes which are at least on the margin of consciousness, if not unconscious.

We are now able to proceed further in our explanation of the behaviour of the neurotic. We have seen that emotionally toned groups of ideas, or complexes, are often dissociated, and repressed into the unconscious, and kept there because their recall has been the occasion of unpleasantness in the previous experience of the individual. Repression achieves a part of its aim; it keeps the tabooed ideas out of consciousness, but it is powerless to prevent these ideas or complexes or dispositions or whatever one may call them, from affecting the behaviour of the individual. We noted above a fact from normal psychology, that, unconsciously, we often give expression to certain ideas, impulses, and tendencies without being aware that we are doing so. Now the anomalies in the behaviour of the neurotic are not very different from these facts. There seems to be no reason for denying to the content of the subconscious the same dynamic character as we find in that of the conscious. The differences which one would expect to find, if we are acting from unconscious reasons, are these, (1) The actions will not be in keeping with the conscious content of the mind. We may give expression to a wish to recover, and zealously assert our desire to be rid of these terrifying dreams, violent emotional disturbances, and quasi-organic disorders, but psychoanalysis has shown that many of the neurotic symptoms are of peculiar value to the patient. He may have a dread of the trench life, hysterical blindness or deafness provide a solution; he may find his vocation in civil life very depressing and repulsive, hemiplegia provides a means of escape; the housewife may rebel to herself at the endless and unrequited toil of the home, she will develop ties or tremors, or will find that she experiences violent pain when bending down to scrub floors. In every case the patient will strenuously deny that there is any *conscious* relationship between the type of disorder, and the situation to which all evidence points as a cause, and the patient is quite truthful in such a statement. The causes are, by this time, not in consciousness, and it usually requires a good deal of courage and self-assurance on the part of the physician to convince the patient that herein is the explanation.

(2) These acts cannot be controlled by the will. It is useless for a physician to advise a patient that his disorder is entirely imaginative and that all that is needed is that he should make up his mind not to be troubled by it. We shall not go into the psychology of the will; all that we need note is that the advice, as stated above, has often been given, and has often been the occasion which threw the patient into the hands of a more sympathetic and less qualified healer. The will refers only to fully

conscious phenomena; the causes of the disorders are definitely not conscious.

The anomalous behaviour may not be a direct expression of the complex, but indirect. Freud found some reason, (for him sufficient), for asserting that dreams are "distorted by a psychic censor," since the expression of the complex would be unpleasant, and would waken us. The anaesthesias, contractures, spasms, paralysis, etc., are, according to Freud, also, at times, indirect expressions of repressed wishes. The direct expression would involve us in conduct of which society would disapprove. The reasons for the specific localizations of the disorders is the problem in point here, and it must be acknowledged that it is a difficult one to explain. Freud contends that the types of physical disorders are not dependent on any local organic weakness, but are somehow symbolic of the repressed wish. Many psychiatrists are not prepared to accept this statement.

Jung is much more successful in accounting for the localization of the physical disorders, when he considers the noxae to be direct expressions of, and to provide him with his best clue to, the content of the complex. To Jung the neurosis is an unconscious solution of an intolerable situation, and the stigmata must be considered as directly symptomatic. Jung also gives us a clear explanation of the "resistance" on the part of the patient to treatment and cure. Unconsciously he does not wish to be cured, because this would only mean a return to the situation from which the neurosis had freed him. Hence the patient develops blindness to escape return to the trenches, bodily pains in order to make it impossible for him to return to his office, he neglects treatment or varies his symptoms, all in an endeavour to avoid the cure which means return to the duties of life, whether civil or military occupations.

It will be of interest here to note that Freud considers that there need be no neuropathic constitution in the patient in order that a neurosis may develop. That this is not the viewpoint of many psychiatrists is indicated in the War Office report on "Shell Shock," in which the following statements occur: "authorities are agreed that in the majority of cases of war neuroses, there already existed a congenital or acquired predisposition to pathological reaction in the individual concerned, and that this constitutional characteristic was of vast importance." (p. 97). Again we read: "in the large majority of persons showing emotional 'shell shock' there was present in the family history or in the personal history, evidence of weakness, instability, or defect of the nervous system." There is strong evidence that Freud's contention is not valid in many cases, but the matter must still be considered as *sub judice*.

5.—One final fact may now be considered. This is what is called in clinical psychology *Libido*. This term has been improperly restricted by Freud to sexual energy; it means vital energy of any sort, of which the sexual is but one form. This libido is, in part, defined by inheritance as to the modes in which it shall operate. Thus, there are certain innate forms of behaviour known as reflexes and instincts, the latter being differentiated from the former by their greater complexity, variability and modifiability. These provide the primary channels for libido occupation. The experiences of life simply extend the number and organization of the outlets. The major instinctive tendencies, *e.g.*, the sexual, parental, pugnacious, and so on, are accompanied by strong emotions.

Society does not allow the free manifestation of these instinctive tendencies, but by custom and taboo leads the child to modify or repress such libido occupations. Because of their strong emotional accompaniments, repression of instincts is a difficult and dangerous process, and one which shows a definite relationship to neurotic disorders. Sexual excitation is, in part, conditioned by external stimuli, in part by internal development. If either group of facts provides stimulation, then the organism must manifest excitement. But society has nowhere placed its taboos more strongly than on sexual activity, and on all ideas relevant thereto. If the early treatment of sex tendencies and sexual imagery has not been one which has provided a proper direction to this libido, then we may expect outbursts at a later period of life. Such manifestations are dreams, phantasies, and disproportionate emotional life. Freud, Jung, Pfister, and Rivers all point out that the childhood experiences are of very great significance in accounting for the adult neurosis; they are not in agreement as to the actual part childhood plays, but all emphasize the importance of careful direction of instinc

tive forms of libido expression, whether sexual or otherwise. It may be of value to point out here that investigation of war neuroses has proven that Freud's theory that all neuroses are sexual in origin, is not correct, no matter how widely one interprets the term sexual.

Emphasis has been placed, in the latter portion of this discussion, on the importance of the emotional life in determining the repression and the anomalous behaviour. It will be remembered that there are several theories of neuroses in the field, that noted above, an endocrinogenic theory, and an autonomic disorder theory. In the present state of our knowledge of the physiology of emotion we may have to consider the theories as supplementary or alternative, but in the opinion of the writer, continued research on the neuro-physiological basis of emotional life may very well show that the theories are both referring to the same group of facts, and that the only disagreement is one of terminology: one being physiological and the other psychological.

All through this analysis we have been forced to recognize the existence of a subconscious. It is sometimes asserted that psychologists are not in agreement as to whether or not there is a subconscious mind, or as to the laws which govern its action. The latter half of the statement is correct; the other contention is wrong. The attitude of clinical psychologists to the subconscious may be legitimately compared with the attitude of biologists to evolution; no one denies the fact, but the *modus operandi* is far from being settled. Meantime the contention is valid, that a number of the thoughts we have, of the acts we do, and of the emotions we feel have their origin in causes unsuspected by ourselves.

We have now accomplished our first aim; that of accounting for the anomalous behaviour of the neurotics. Starting in every case from the facts of normal psychology we have traced the deviations which lead by short stages over to the abnormal reactions of the neurotic. This analysis has shown that such behaviour is not more mysterious than that which is called normal, and that the primary problem, for one who would understand the abnormal, is that he shall comprehend the nature of normal processes.

It remains for us to note briefly the treatment of neuroses. The foregoing statement of aetiological factors offers direct guidance at this stage. If the neurosis is due to repressed complexes and repressed instinctive tendencies of strong emotional character, then the problem of the physician is the isolation of these pathogenic factors and their gradual eradication. Either hypnosis or psychoanalysis may be employed for this, but psychoanalysis has certain considerable advantages, and has succeeded where other methods have failed. Space does not permit us an explanation of the technique of treatment; that should be procured from one of the many available texts on the subject. No matter what method is employed the period of treatment will be lengthy and its course one full of disappointments and disillusionments. But because of the fact that we are now able to understand in some degree the mechanism of the disorder, and because the skill of the physician is being so directly challenged by the success of non-professionals, it is certain that much more attention will be given by the profession to these disorders.

One of the chief functions of the courses in psychology, now being offered in medical schools, is to provide the physician with a scientific statement of the methods by which diagnosis and treatment of mental disorders may proceed, and thus enable him to approach neuroses with the same confidence and scientific assurance as has characterized his approach to demonstrably organic disorders.

Congenital Sarcoma of Kidney in a Child of Twenty-Nine Days—Clyde Leroy Deming, New Haven, Conn., reports a case to emphasize (1) the value of complete cystoscopic examination in children; (2) that urograms are just as essential in the examination of infants as in that of adults, and (3) that local anaesthesia may be used for nephrectomy in infants.—Jour. Am. Med. Assoc., April 14, 1923.

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ANTIPYRETIC MEASURES

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THE SIGNIFICANCE OF FEVER

AS to whether fever temperature in itself is usually beneficial we are still uninformed. In pursuing the history of this question, one meets with all shades of opinion. At one extreme is the doctrine of the ancients that fever constitutes a beneficial "purging by fire"; at the other is the belief once held by the Liebermeister school, that all fever patients should be subjected to drastic cooling by hydrotherapy.

One definitely established fact is that the metabolic rate in various fevers increases in conformity with the law of van't Hoff. This law states that each increase of 10° C. augments the velocity of chemical reactions to an amount varying from two to three-fold. This has recently been demonstrated in detail by Du Bois[1] and his collaborators for malaria, erysipelas, tuberculosis, acute arthritis and other febrile conditions. Incidentally Du Bois' results afford an excellent example of the application of chemical laws to biological processes.

Such stimulation of metabolic activity by fever temperature, if significant at all, would appear to be somewhat wasteful of energy and perhaps of tissue. Older experimenters have shown that antitoxins and other protective bodies in some cases develop in animals more rapidly if the body temperature be artificially raised.

Indications for Antipyresis.—In spite of this uncertainty as to the optimum body temperature in infectious disease, there must be recognized three definite indications for the employment of antipyretic measures:—(1) etiotropic; (2) symptomatic; (3) hyperpyrexia, or dangerously high body temperature. Malaria may be taken as an example of the etiotropic indication—the antipyretic effect of quinine being of far less importance than the destruction of the parasite. In the case of the symptomatic indication, temperature reduction is really needed, perhaps not for its own sake so much as for the consequent relief of discomfort. In hyperpyrexia, *e.g.*, with temperatures of 106° F. and above, antipyresis is the main object.

The antipyretic measures employed to-day are cold applications and drugs.

Application of Cold.—Cold is not applied with the same degree of intensity as was urged by Leibermeister several decades ago, and the reason for the substitution of cool sponges and similar measures for the cold baths has become more apparent with the increase of our knowledge of the heat-regulating mechanism of the body. Cold applied to a homoiothermic animal exerts simultaneously two opposite effects. It abstracts heat from the body in the same way and according to the same laws that apply to its relation to any object of a higher temperature; the fact that has been frequently overlooked is that in the homoiothermic animal it simultaneously arouses the *regulation against cold*.

In the regulation against cold, processes of increased heat production and decreased heat elimination are set up, with the result in the normal animal that a practically constant body temperature is maintained in spite of an adverse environment. When the external cold becomes excessive or the reserve stores of bodily energy exhausted, the protective mechanism breaks down and the body temperature falls.

Now, in fever we have a pathological condition involving an abnormally active regulation against cold. A moderate environment is interpreted by the temperature-sense nerve endings in the skin as too cold. The protective mechanism is aroused in absence of its need, producing the phenomenon of a chill. Blood of a high temperature must now pass through the nervous centres of heat regulation (especially the basal ganglia of the brain) before the mechanism of protection against cold becomes inhibited.

If we employ very cold applications in fever we stimulate a mechanism which is already hyperfunctioning, and only accomplish the end sought by breaking this mechanism down. While the same reasoning applies to the cool or tepid sponges, a certain amount of heat may be abstracted with care by these procedures—often to the benefit of the patient—without arousing the protective mechanism to the point of exhaustion. Friction employed with cool sponges is said to bring more blood to the surface, and in this way to promote cooling. The rubbing procedure may, however, arouse only enough of a response to compensate for the extra heat which it introduces. Passive exercise with cool sponges is said to be beneficial by preventing congestion. Incidental to the application of cold to the body surface, there is apparently aroused an increase in the tone and activity of smooth muscle, resulting in increased peristalsis and the like.

Antipyretic Drugs.—Drugs, on the other hand, when employed for the reduction of fever temperature, may interfere less than does hydrotherapy with the normal processes of the body. Here we do not arouse the regulation against cold but employ measures, which if rightly used, seem to restore the normal threshold of this protective mechanism without untoward side actions.

Antipyretic drugs were formerly classified according to whether they acted by decreasing the production or by increasing the elimination of heat. Quinine was cited as acting in the first mentioned manner. This teaching, however, was based upon insufficient evidence in which the action of quinine in large doses, as a general protoplasm poison, was unduly emphasized. Tests made three years ago in the New Haven Hospital have shown that in tuberculosis quinine acts very inefficiently as an antipyretic, and in the cases experimented upon, produced a 6% increase in the heat production. Various antipyretic drugs were investigated at that time with a view to determining the respective rôles of heat production and elimination in antipyresis. The following summary of hitherto unpublished results may be of interest in this connection. The respective percentage changes in heat production and elimination during the most marked period of antipyresis are shown:—

Drug and Dose in grams.	No. of Cases	Calories produced % Change	Calories eliminated % Change
Acetyl-salicylic Acid 1 G.	4	—3.5	+38.2
Phenacetine 0.2 G.	1	—13.2	+35.6
Lactophenin 1.0 G.	1	+ 6.1	+16.3
Antipyrine 0.5 G.	3	— 1.2	+21.5
Quinine 0.5–1G.	3	+ 6.3	+22.7
Dextrose (Tbc.) 50–100G.	8	— 1.9	+14.9

From the above it is evident that antipyretic drugs reduce the temperature in tuberculosis chiefly by increasing the heat elimination, and there is no reason to doubt that this applies to other fevers.

How Heat Elimination is Increased:—Dextrose was included in the above work not only because we were able to show that it reduces the temperature in tuberculosis but also because its employment illustrates well the mechanism of antipyretic drug action. This was brought out especially in laboratory studies upon colon bacillus fever in dogs. Barbour and Howard[2] found that intravenous dextrose, like the antipyretic drugs, reduces the body temperature of such dogs, failing to do this in normal animals.

Dogs suffering from colon bacillus fever exhibit an abnormally high blood concentration, owing apparently to a loss of fluid to the tissues; (where, according to Woodyatt[3] "free" water becomes "bound" in febrile conditions). As soon as it could be shown that dextrose given intravenously recalls lost fluid to the blood, producing a greater degree of dilution of the blood in fever than in health, the reason for its antipyretic effect in the former condition became clear. Dilution of the blood promotes the elimination of heat by affording a greater volume of blood to fill the peripheral vessels, and by providing more free water for evaporation from the respiratory tract and skin.

These facts led to the hypothesis that antipyretic drugs act by dilution of the blood, which has been substantiated by Dr. Herrmann and the author.[4] We observed that antipyrine, quinine, aspirin and sodium salicylate all dilute the blood in fever dogs co-incidently with their antipyretic effect. In the normal animal on the other hand, in conformity with its known resistance to antipyretic action, these drugs produce no dilution of the blood. A new factor in antipyresis has thus been demonstrated; augmenting the shifting of blood from the in-

terior of the peripheral vessels we have the shifting of water from the tissues to the blood. Attempts to throw further light upon this mechanism are now being made in the laboratory of pharmacology at McGill.

Modern Antipyretic Agents.—The value of intravenously given dextrose in pneumonia, typhoid and other infections has been pointed out by Litchfield[5] and others. By mouth fifty or one hundred grams are required before sufficient is absorbed to produce antipyresis. This is effective, however, in mild tuberculous conditions.

Among the coal-tar products it is an old story that antifebrine (acetanilide) and phenazone (antipyrine) exhibit a greater collapse-producing tendency than do phenacetin and the salicyl derivatives. Amongst the latter aspirin appears to be the surest antipyretic, but its irritating properties appear to be underrated. In dogs aspirin given in large amounts produces gastric ulceration. It should be taken only with abundance of water. This is to be remembered especially in acute rheumatic fever where large doses are requisite. The tendency to gastric and duodenal ulcers has been associated by some writers with the occurrence of acute rheumatic fever. Is it possible that this is due to medication with concentrated salicylate?

The cinchophen (atophan) group of drugs has recently been found to possess a high degree of antipyretic and anti-rheumatic efficiency. Of these tolysin (ethyl ester of paramethyl atophan) is made upon the salol principle, so that the acid radical is not liberated in the stomach. Furthermore it possesses little or no toxicity, because it is but slowly absorbed from the intestine. Dr. Lozinsky[6] and the author were unable to kill dogs with doses of tolysin up to five per cent. of their own body weight, although we could prove the complete absorption of therapeutic doses both by their absence from the intestinal tract and their marked, although slow, antipyretic action. Acute rheumatic fever cases have been successfully treated by this drug at both the Montreal General and Royal Victoria Hospitals.[7]

The development of a wide field of usefulness for the derivatives of atophan as antipyretics was never dreamed of when this drug was introduced as a uric acid eliminant.

The analgesic action of antipyretic drugs affords a most interesting study which does not fall within the scope of the present article.

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Action of Stronger Solutions of Mercurochrome in Early Gonorrheal Infections.—Ernest Rupel, Indianapolis, has used a five per cent. mercurochrome-220 soluble solution with good results. A disappearance of purulent discharge was effected by the third day in seventy-five per cent. of these cases. In ten, or 21.7 per cent. of the cases, posterior symptoms developed, the severity of which did not differ from the usual incidences of such. Approximately seventy per cent. of the patients reached an apparent cure in one week, and in ten days seventy-five per cent. were cured. Freedom from symptoms, both objective and subjective, constituted a "cure." Fully one-half of the patients have been dismissed more than a year. There have been no recurrences.—*Jour. Am. Med. Assoc.*, February 24th, 1923.

Regeneration of Blood in Infancy.—Opitz, (Monatsschrift für Kinderheilkunde, Leipzig), tried comparatively large infusions of blood in different anaemic conditions in infants. The amounts to be infused were computed to bring the number of corpuscles in the child to normal. They were repeated after from four to ten days, as often as necessary. The results were very good except in two children with lymphosarcoma and myeloid chloroma. He believes that the injected corpuscles are not destroyed, because the signs of regeneration (erythroblasts, basophilic stippling, etc.) disappear from the blood. It is probable that the injected blood takes up part of the work, and gives the bone marrow time to rest and recover. Mixed diet and a moderate reduction of milk may hasten the recovery of the patients.—*Jour. Am. Med. Assoc.*

DIRECT MEASUREMENT OF VENOUS PRESSURE IN MAN

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THE method used for gathering material for this paper has not been used for venous pressure previously. Venous pressure is referred to so infrequently in medical literature that it is not out of place to mention the methods that have been described heretofore. Indirect readings have been reported by Sewall, Hooker, Eyster, Clark, and Brown; direct readings by Moritz and von Tabora in 1910, and by Villaret, Saint Girons, and Grellety-Bosviel in 1921.

The indirect method is carried out by measuring the amount of force that is required to cause one of the visible peripheral veins of the skin to collapse. Some form of capsule is applied over the vein, either by sealing it to the skin or covering its mouth with rubber and holding it in contact with the skin while sufficient air is forced into the capsule to close off the vein. The pressure is gauged by a water manometer connected with the capsule, the point at which the blood stream is controlled being judged by the flattening of the vein or by stripping the vessel to the nearest valve and watching for the re-filling upon reduction of the pressure.

The usual direct method is to insert a hollow needle in a vein and measure the pressure with the manometer connected up with the needle.

The procedure which we adopted was to connect a piece of ordinary glass tubing, 8 or 10 inches long, to a number 18 or 19 gauge needle and measure with a wooden rule the height to which the blood rose in the tube when held vertically.* As needles, especially of the smaller size, did not always work well, a second reading was made in cases of doubt. The patient was tested lying down with the flexor surface of the elbow propped up to the level of the heart. This latter level was considered to be 8 cm. deep from the sternum. The needle and tube were of course carefully sterilized, and before use, were lubricated by drawing a few drops of sterile paraffin into them.

This procedure is apparently reliable, it does not depend upon the visibility of the veins, and requires so little apparatus that it is practicable for any physician.

Of about seventy-five observations on fifty patients, fifty readings have been used as the basis of this paper, some of the results of earlier technique not being uniform. The patients were under care for various complaints but an effort was made to select cases that were likely to show some interference with their circulatory equilibrium .

It was found that the normal pressure ranged from 10 cm. to 14 cm. of blood, which is approximately equal to 10½ cm. of water or 7 to 10 mm. of mercury. Various cases show the following ranges:

(1) 0-6 cm. blood: case of dilated colon with six weeks' persistent debility after removal of cæcum and half the colon.

(2) 7-9 cm. blood: cases of two convalescent fibrillators; one convalescent rheumatic with severe mitral and aortic insufficiency; and one of hypertension with hemiplegia; one asthmatic during an attack.

(3) 10-14 cm. blood (normal): cases of valvular disease, severe and mild, or fibrillators who have been under medical care for long periods; of hypertension and arteriosclerosis (two of these with old hemiplegia); of nephritis; hyperthyroidism; septic broncho-pneumonia; pernicious anaemia and post-operative cases.

(4) 15 to 17 cm. blood: two asthmatics between attacks; one convalescent broncho-pneumonic; two youths with severe mitral and aortic defects who were over-active, contrary to advice; one myocardial case (arborization block), that died three days later, and the above mentioned colon case before operation.

(5) 18 to 20 cm. blood: two very recently

*It is of interest to note here that the first reading of arterial pressure was made by Rev. Stephen Hale in 1744 by a similar method. He found that the blood from the femoral artery of a mare rose 8 ft. 3 in.

improved cases of heart failure; one acute pneumatic with Pott's spine; one chronic bronchitic with much fibrosis but little prostration; and one asthmatic immediately after partial relief by adrenalin.

(6) 20 to 27 cm. blood: one uncompensating heart case during a period of distress.

All of these readings were taken during the morning visiting hours in the Winnipeg General Hospital.

The factors concerned in maintaining the pressure in the veins may be stated as (1) resistance at the heart; (2) contraction of the veins; (3) the viscosity of the blood; (4) the pressure of the tissues; (5) gravity; (6) pressure from behind (capillaries). These factors are not discussed here. It is merely attempted to classify a number of disease conditions according to their venous pressures as found by the method described and to compare the results with those of other writers as follows:—

The French authors above mentioned claim that the venous pressure, under physiological conditions, follows the arterial, 1 cm. of venous pressure by water manometer corresponding to 10 mm. of arterial pressure by mercury. This does not seem to be borne out, but we have not fully tested the point. Certainly the increases in the two pressures do not correspond in the uncompensated cases of this series as they describe. An interesting fact in their experience is that two patients with pressures of 25 cm. had a fall in pressure to 10 cm. and 18 cm. respectively, with amelioration of symptoms after they had been treated by bleeding, purgation, and digitalis.

In our series the high figures for some pulmonary cases attracted our attention. One chronic bronchitic and one acute pneumonic had venous pressures of 18 cm., three asthmatics had venous pressures ranging from 16 cm. to 18 cm., and a recent convalescent from

	Indirect		Direct	
	Brown	Clark	French Authors	Young
Normal	3–9 (under 10)	8–10	12–13	10–14
Uncompensated Hearts	20–30 (serious myocardial changes)	21–29.7	19–40	18–27
Compensated Hearts	12–18 (moderate compensation)	13–19	normal	normal or less
Aortic Insufficiency	18–1 (well compensated)	.. ..	19–24	normal
Arteriosclerosis	.. ..	.. ..	9–16	normal
Hypertension	normal	.. ..	19–31	normal
Asthma	.. ..	.. ..	..–..	15–17
Some Lung Inflammations	.. ..	.. ..	..–..	18–20

Clark found a wide diurnal variation, amounting to 10 cm. on the average, with a maximum in cardiac cases occurring about midnight, while in normal cases the maximum came about 6 p.m. and the minimum at various times during the day (4 a.m. to 10 p.m.). Other conclusions that he reached were to the effect that pressures above 20 called for vigorous treatment and that if such cases did not respond to digitalis the outlook was grave; also, that pressures which remained persistently below 20 were not easily affected by digitalis, the heart evidently meeting requirements as well as possible. Patients who died all gave a high reading before death—up to 38 cm.

broncho-pneumonia had a venous pressure of 17 cm. The heart case which showed a venous pressure of 27 cm. at one examination, showed 17 cm. a few days later when symptoms were less urgent.

It was found also that in a normal young man the venous pressure at the elbow, in the sitting posture, was 10 cm., and at the calf of the leg in the standing position, it was 14 cm.

In an arteriosclerotic with bad varicose veins of the leg, the elbow showed 14 cm. in the prone position, while one of the varicose veins showed 34 cm. in the standing position.

A patient with peritonitis from perforated duodenal ulcer, four days after operation, and

another patient, one day after herniotomy, had venous pressures of 11½ and 10½ respectively.

By exerting a pressure of about ten pounds on the abdomen of the patient with acute pneumonia, the indicator promptly registered a rise of 2 cm. which was reduced as the weight was removed; yet very little oscillation of the blood in the tube was ever detected during respiration.

The figures obtained for this report are all from patients in the wards of the Winnipeg General Hospital under fairly uniform conditions. The series of different observers must necessarily show discrepancies according to the stage and type of cases examined. The numbers are far too small to allow of very positive conclusions, but there is enough uniformity in the various papers to satisfy us that there is a field for the application of the test. The technique will have to be standardized and the normal range with its variations will have to be more accurately established, but these features need not interfere with the employment of the procedure; they will be settled naturally in the course of the search for abnormal pressures.

The circulation must be considered as a whole when we are dealing with its relation to disease and yet clinically we have given almost the whole of our attention to the details of the movement of the blood between the tricuspid valve and the capillaries. The physiologists have dug out many facts about the capillary and venous circulation, but the clinician has not yet applied much of that information. On the other hand we have probably tended to overestimate the importance of our clinical findings on arterial pressure.

It may be concluded: (a) that high venous pressure in cardiac cases is evidence of heart failure; (b) that under treatment the pressure returns to normal if the patient shows fair response; (c) that pulmonary cases accompanied by dyspnoea probably have a high venous pressure; (d) that other debilitating conditions such as pernicious anæmia, operations, and hyperthyroidism, do not appear to influence venous pressure.

The cases of nephritis examined had normal readings but they were not of a character to permit of general conclusions being drawn.

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Blood Pressure During Sleep.—Katsch and Pansdorf, Munch. Med. Wochen Schrift, Dec. 15, 1922, were able to study the blood pressure of patients during sleep. The main point was to lead the rubber tubes into another room to increase the pressure of the band slowly and read the pressure quickly. The systolic pressure is normally lower, but the diastolic does not change, except for a slight increase during very deep sleep. Thus the amplitude of the pulse is decreased from both ends. Some patients with hypertension presented marked decrease in blood pressure, and "sleeping cures" might be advisable for them. Other hypertonics (two cases of uremia) had no decrease in the pressure.—*Jour. Am. Med. Assoc.*

Pneumoperitoneum as an Aid in the Diagnosis of Subdiaphragmatic Conditions.—Attention is called by L. R. Sante, St. Louis, to the use of pneumoperitoneum in the examination of acute infectious involvement of the subphrenic space. Very little air is necessary in the examination of this region, and, if inflation is carried on with the patient in a recumbent position under the fluoroscope, any involvement of this space can be at once detected, and the inflation discontinued. If the procedure is carried out in this fashion, there need be little fear of breaking any existing adhesion walling off an infectious process, no matter how delicate or recently formed. Information gained in this manner, either establishing the presence of a subdiaphragmatic abscess or excluding its possibility, is of the utmost value in the prognosis and treatment of the condition. This is especially true since the accepted method of surgical procedure for drainage of such abscesses is very extensive and necessarily involves vital structures. A case in point is reported.—*Jour. Am. Med. Assoc.*, February 17th, 1923.

XUM

MALNUTRITION*

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MALNUTRITION may be defined as a condition existing when the body weight is above or below the normal standard for the individual, based on the height of that individual. Dr. Wm. R. P. Emerson states that "After long experimentation, we have found that the best single rule of selection for malnutrition is based upon the relation existing between weight and height and that a body weight habitually 7% or more under the average weight for the child's height is not equal to maintaining him in normal health." Malnutrition is certainly a fundamental handicap and is now recognized as one of the chief causes of defective manhood. As one writer points out, "It affects height and weight, interferes with general development, lowers vitality, making every child susceptible to infections with less chance of recovery and more of relapse. It is likely to precede tuberculosis and it retards mental development." Malnutrition is found among the children of all nationalities and of all classes of society and it is a well known fact that it is prevalent among the children of the rich rather than among those of humbler circumstances. The family of the Italian immigrant shows less malnutrition as a rule than that of any other nationality. It is common in all ages and in both sexes. It has been found that, on an average, 33% of all school children are under weight for their height. This percentage varies greatly in different schools and in different localities. Emerson has shown that in a Chicago school situated in the suburbs where all the pupils came from families in very comfortable circumstances, 57% were found to be undernourished, whereas in a school in the vicinity of the stock yards where the children were from the poorer class families of all nationalities, the percentage was only 18. This fact has been demonstrated in every city and town where malnutrition classes are being conducted. The causes of malnutrition are five: (1) Physical defects; (2) Over-fatigue; (3) Lack of home control; (4) Faulty food habits, and (5) Faulty health habits. Of the *physical defects*, the most common one is nasopharyngeal obstruction. This condition accounts for a large proportion of all undernourished children. In some groups it is as high as 80%. *Over-fatigue* is more common at the present time than ever before. The modern child must not only do well in school, but also carries the additional burden of music and dancing lessons and frequently, attendance at social functions resulting in loss of sleep, is demanded. It is surprising how little time some children have for rest and recreation. *Lack of home control* is also an important factor. Too many homes in these days are ruled by the child. There is no fixed bed-time hour and the child goes to bed when he sees fit. In the morning he is allowed to sleep until an hour that just gives him sufficient time to dress, eat an insufficient and hurried breakfast and get to school. If he doesn't care to have the window opened at night it remains closed. In fact every desire of the child is gratified even at the sacrifice of his own health. *Faulty food habits.* The child will not drink milk and is a tea or coffee addict. The morning cereal is refused and candy is eaten at all hours with the result that there is no appetite for proper food at regular hours. *Faulty health habits.* Lack of care of the teeth, constipation, infrequent bathing, sleeping with closed windows and working in crowded, ill ventilated rooms, are the most common.

These children present a typical clinical picture. They appear dull and listless with a serious or anxious expression of countenance. The muscles are flabby and the resulting pos-

*Paper read before the Halifax Branch of the Medical Society of Nova Scotia at Health Centre No. 1. February 8th, 1922.

ture is quite noticeable, especially if the child is sitting. The skin is pale and there are dark circles under the eyes. If the cause of the condition is nasopharyngeal obstruction, the mouth is open and the expression dull and sleepy. The teeth are usually prominent and the nasal orifice small and pinched. The child is indisposed to physical or mental exertion and is usually backward in school, from one to two years behind the normal pupil of the same age. The scales establish the diagnosis beyond any doubt and show the degree of malnutrition existing. A complete physical examination is made on every child found to be 7% or more underweight. If any physical defect is found it is corrected if possible before the child is admitted to the class.

The class method as developed by Emerson, is, in our experience the best way to treat these cases. As Emerson points out, this method has the following advantages:—

(1) The class method appeals to the imagination of the child and makes him do for himself what no one else can do for him. It teaches and inspires him to train for health in the same way he trains to be a Boy Scout or an athlete. A large proportion will do exactly as we ask them, open windows, take lunches, rest periods, etc.; (2) Economises time of all concerned; (3) Introduces healthy competition; (4) Pools experience of all families for the benefit of each; (5) Favours study and correction of home difficulties by meeting parents under friendly conditions; (6) Removes obstacles too great for the authority of the parent; for the undeveloped reason of the child will yield in a surprising manner to interest developed in class; (7) Removes prejudices and fears through knowledge of results obtained, and convinces in a moment when hours spent in argument have failed; (8) Utilizes the approval of companions as a strong influence in causing a child to do as directed. This last applies to the mother as well as the child. The mother will not willingly permit her child to sit at the foot of the class week after week; pride in her child will cause her to make every effort to advance that child towards the head of the class.

The class is conducted along kindergarten lines and everything is done to obtain the co-operation of the child. A large chart is made for each child and the weight is recorded each week. This chart is placed on the wall in front of the child that he may see some graphic evidence of the progress he is making. The child who makes the greatest gain sits at the head of the class and receives a gold star on the chart. Different colored stars are also given to those who do not fail to take the mid-morning and afternoon lunch and to those who take their rest periods regularly.

As over-fatigue is a great cause of malnutrition we insist that a half-hour period in the morning and afternoon be devoted to complete relaxation on a bed in a quiet or darkened room. The mid-morning lunch taken to school consists of some simple article of diet such as bread and butter or a sandwich; something of a food value of about 300 calories. We find that this lunch does not in any way lessen the appetite for the following meal. Tea and coffee, and candy between meals are absolutely forbidden. We advise the consumption of a quart of milk a day and insist upon a pint. The total number of calories per day should be approximately 3000.

General instruction in hygienic living is given, such as the importance of fresh air by night and day, exercise in the open, required amount of sleep and cleanliness of person and surroundings. Four chief causes of failure to gain have been noticed:—(1) *Illness*: Tonsillitis or "cold" may cause the loss of two pounds in one week. (2) *Environment*: it has been repeatedly shown that a child living in an unhappy home with quarrelsome, nagging parents may fail to gain. (3) *School examinations* may cause the loss of three-quarters of a pound in one week. A child who is active before breakfast may lose one-half a pound a week. (4) *Worry*: In the Emerson clinic three children lost one pound a day when a little sister was missing for three days. The treatment of malnutrition and its effects is simple. Once the physical defects are corrected and the intelligent co-operation of child and parent is obtained, the resulting improvement is striking. There is no additional cost and no trouble. The proper hygienic routine that is established in the home makes for increased happiness in the whole family and gives more leisure time to the parents.

XUM

MODERN EPIDEMIOLOGY

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DURING the last twenty-five years comparatively little change has occurred in the methods of treatment of surgical and medical diseases, as compared with the recent advances which have been made in the bacteriological and epidemiological study of the causes and prevention of communicable disease.

The bacteriologist, the epidemiologist, and the vital statistician, have reached a common basis of agreement, which clearly indicates the desirability of putting aside many traditional fallacies regarding communicable disease which are still firmly fixed in the minds of the laity and to which some members of the medical profession engaged in general practice, still yield a tacit obedience. It is with a view, therefore, of encouraging the medical profession to cooperate with health officials generally in enabling the public to gain saner views of the real sources of infection in communicable disease that I have ventured to prepare a short paper on the practical aspect of modern epidemiology.

In accordance with the principles of what is called the new public health, which relegates to oblivion or to comparative unimportance, many of the supposed factors in the causation of communicable disease, I shall attempt to indicate some of the fallacies and mischievous ideas naturally held by even the intelligent laity, as a result of the illogical teachings of our medical profession up to very recent years and which not a few medical men still support, or at least do not oppose.

In speculating as to the cause of an outbreak of communicable disease in a given family, the attention is often concentrated on the environment of the individual affected, the insanitary conditions, real or imaginary, in the neighbourhood, etc., to the exclusion of the real cause of infection in some of the human beings with whom that individual has recently been in contact. In other words, the source of disease is sought for in inanimate things rather than in man himself. In accordance with this environmental theory of disease, it is not so long since malaria was believed to be due to exhalations from swamps and sloughs; typhoid fever or diphtheria to sewer gas, odours from stagnant water, damp cellars, leaky plumbing, decaying vegetation and garbage or dead animals; in general, everything of a disagreeable or non-æsthetic nature was supposed to give origin by a process of biogenesis to all the various germs of communicable disease quite independent of the human being, who directly or indirectly is responsible in practically all cases.

The new views of contagion find the real source of disease in an infected individual and in the emanations from his body which find their way by various and devious routes to the healthy or uninfected individual. Examples of agencies are water, milk, food, flies, and fingers, all of which may be a vehicle by which disease germs find their way into the systems of the uninfected. While health authorities should not fail to give considerable attention to the removal of nuisances, proper disposition of garbage and manure, etc., and everything that is an offence to the æsthetic aspirations of the intelligent citizen, they must concentrate their energies chiefly on the real sources of communicable disease, if they would prevent to as great an extent as possible the spread of an epidemic. To this end there should therefore be investigated:

1.—The infected individual and the probable source from which his infection was derived; 2.—The routes of spread from that infected individual; 3.—The routes of spread from ordinary uninfected individuals to their associates.

With the infected individual precautions preventing him from infecting others should be taken by isolation, effective quarantine, and the destruction or disinfection of all secretions and discharges. To limit the spread of infecti n from the individual, the necessary attendants

or nurse should be fully instructed in ways and means of preventing infective material from reaching the food or oral passages of others in the same house or in a hospital to which the patient may have been removed, and finally the question of the possibility of infection being carried by some person, not suffering from the disease should be given attention. The importance of fomites as a source of disease conveyance has probably been greatly exaggerated in the past. It is certain that disease germs do not long retain sufficient vitality to be dangerous, when separated from the human body and particularly if exposed to bright light and fresh air. It must be admitted, however, that secretions and excretions if transferred on articles of clothing, etc. while still moist and fresh are capable of transmitting infection. The word "carrier" as now used has a meaning limited to the individual who harbours the germs of a disease in his tissues without suffering from the disease itself, and who is capable of infecting others. We have positive evidence that there are "carriers" of diphtheria and typhoid fever. In the case of the latter, a woman called "Typhoid Mary," who being a cook, infected 26 persons in 6 families, where she was employed in this capacity, is the classical example frequently referred to in this connection. Becoming suspected she was eventually found to be a "carrier" of so persistent a nature that she had to be kept in an institution, and though on one occasion she attempted to regain her freedom from restraint, the courts quite properly refused to allow her to resume her old occupation of cooking. While we do not yet know what the germ of scarlet fever is bacteriologically, there is no logical reason why there should not also be carriers of this disease, which may account for some of the cases where we do not appear to be able to locate any definite source of infection.

Up till recent years, the desquamation or peeling of the skin following scarlet fever was believed to be closely associated with the infectiveness of the individual patient and most of the teaching on the subject conveyed this impression which is still firmly fixed in the minds of the laity. Observation and some experimental work appear to have largely discounted this theory. In a recent article on "return cases of scarlet fever," Dr. H. B. Cushing of Montreal, speaks as follows: "For generations the desquamation was supposed to carry the infection, but all the best modern authorities agree that this is a fallacy and that the cast-off scales are not infectious. Most writers believe that the infection is carried by various persistent pathological discharges, and it has been suggested that patients leaving a hospital ward, easily contract catarrhal colds which provide infectious discharges. The most probable explanation is that many scarlet fever patients remain 'carriers' of the unknown causative organism for many weeks or even months."

Air-borne infection largely a fallacy.—That the air is one of the chief vehicles in the conveyance of communicable disease was the universal belief a generation ago even among medical men, and the texts books on hygiene used at that time religiously taught that doctrine. Perhaps the most difficult problem public health officials have to confront, is to dislodge from the minds of the public at large, this firmly fixed but mistaken belief. That air infection was considered of relatively greater importance in surgery than contact infection in the eighties, is indicated by the preparations for an operation in vogue at that time at Bellevue Hospital. Dr. Chapin, of Providence, who has given many years to a study of this subject, relates how a carbolic spray was used in the operating room for several hours before the operation, to disinfect the atmosphere. He relates how, during an operation, the surgeon dropped his knife on the floor, picked it up, wiped it on his gown, and proceeded with the operation, and that the incident attracted little notice and caused no comment. We know now that air infection of wounds is a negligible quantity. Ochsner says: "Air infection is not impossible, but practically no wound infection is to be considered except from contact." And yet it has been clearly demonstrated that the air of operating rooms does contain pus organisms. The explanation of their non-virulence is probably due to their greatly diminished vitality, due to drying and exposure to light, and to their small number. In any case, they fail to infect the freshly cut tissues of an open wound. This being the case, is it reasonable to believe that the ordinary pathogenic organisms float in the air in such numbers and possessed of sufficient vitality to penetrate the intact

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mucous surfaces of the respiratory or alimentary tract?

Since the mosquito has been found to be the factor in the case of malaria and yellow fever, previously believed to be air-borne diseases, researches have reduced the list of possible air-borne diseases to a comparatively small number, and in these, too, the air as a medium of infection is relatively speaking, now known to be unimportant. That measles, smallpox and tuberculosis may be at times air-borne, is still an open question, but many of the leading authorities who have studied these diseases, maintain that air infection is relatively so rare and unimportant as to be negligible. In my experience in Edmonton with over four hundred cases of smallpox, I have been able to satisfy myself that personal contact with a previous case was present in the great majority of the cases, and in no case have I been able to prove in cases in which fomites or air infection might appear to have been a possible source, that contact could be absolutely excluded as a factor. In an article on air as a vehicle of infection, in the February number of the *Journal of the American Medical Association*, Dr. Chapin, Superintendent of Health of Providence, deals fully with the subject, and sums up as follows: "There is little evidence that among the diseases which commonly occupy our attention in this part of the world, aerial transmission is a factor of importance. In most, it is under ordinary conditions of home and hospital, a negligible factor. For tuberculosis alone, is there evidence that air-borne infection is a factor of moment, but the latest word has not been said as to the etiology of this disease. We may be sure that the sewer gas bogey is laid, the notion that dust is a dangerous vehicle of every day infection is unsupported, and that mouth spray is usually effective only at short distances."

How genuine is the fear of danger from air-borne infection in the public mind is strikingly indicated by the clamour of protest which assails a city administration when it proposes to build a municipal hospital for contagious disease in any section where a large residential population has become established in advance. In Toronto the Good, and supposedly the intelligent, an admirable site for such an institution selected by the Medical Officer of Health, had to be abandoned some years ago on account of strong public protest, and later, when a site outside the city limits remote from population was suggested, the farmers of York County registered an objection. And that this theory of an air-borne infection still influences many members of our profession, and even some of our public health officials, is indicated in the tendency to build hospitals for contagious diseases on the pavilion principle, with all their attendant inconveniences and high expense of operation, rather than on the block system, in spite of the fact that infectious diseases are treated with the best results and maximum freedom from cross-infection in many hospitals recently erected, where the only precautions taken are to guard against contact infection, and air-borne infection is absolutely disregarded. Examples of such hospitals are the Pasteur Institute, Paris; the Kingston Avenue Hospital, Brooklyn; the North Brothers' Island Hospital; the Children's Hospital in Paris, and the contagious group of the Providence City Hospital. Winnipeg several years ago opened its new block hospital, conducted on the same principle, and with efficient nursing has had equally good results. Edmonton is about to build a new isolation hospital of the block type. A well trained and strictly disciplined staff of nurses is of course essential to success, but no other quality of nurses should be tolerated in any type of hospital if cross infection is to be reduced to a minimum. Roseneau, in his recent excellent work on Preventive Medicine and Hygiene, states that communicable diseases are not conveyed from ward to ward or even from bed to bed, in well managed hospitals.

Contact Infection Chief Source of Communicable Disease.—Before concluding I desire to emphasize the fact that, with the exception of water-borne epidemics of typhoid fever, or milk-borne infection in typhoid fever, scarlet fever, and diphtheria, which are now fortunately of rare occurrence due to advanced knowledge and the more rigid enforcement of public health measures of prevention, the great factor in the causation of communicable disease is contact infection. This implies the close association of the well with the affected and the transference to the former of the infective contagium contained in the secretions or excretions, while still moist and fresh, on fingers,

food, spoons, toys, etc., which have recently been mouthed or handled by the affected individual or in contact with his person or his discharges. This theory of contact infection is now accepted by practically all the leading sanitarians; it maintains that persons, not things, are chiefly responsible for transference of infectious disease and that infectious diseases are not to any appreciable extent carried by the air As a natural result of the air-borne theory of disease, there has been inculcated in the minds of the public, an entirely exaggerated idea of the value and importance of fumigation as a means of disinfection after infectious disease. The Provincial regulations of the Health Act call for the use of formaldehyde fumigation even in cases of measles and mumps. During the year 1921 we had 2381 cases of mumps and 417 cases of measles. Had we carried out fumigation as directed by the Health Act, we would have expended a very large amount of money and so far as experience throughout the world is concerned, as expressed by the most prominent sanitarians, we would not have had the slightest results in the control of the epidemic. In these cases a disinfectant bath for the patient on recovery was ordered, and a general cleaning and airing of rooms and boiling of all washable bedding and articles of clothing. In this connection the following statement in the *American Journal of Public Health* for February, 1915, emanating from the New York Health Department is significant.

"The New York City Health Department has given up fumigation after cases of infectious disease, as a costly procedure, the inutility of which has been well established. In reply to the query of a New York State physician, as to the 'why' of the action, Commissioner S. S. Goldwater stated that the Department was willing to profit by the lessons of experience and prepared to go forward even at the risk of being misunderstood for a time by the laity and by those members of the medical profession who are content to practice according to formulas which were valid a generation ago but which should now be supplanted by more enlightened views." He said that it was "disconcerting to read that health officers lack the courage to discontinue practices which they publicly confess as valueless," and asked whether it was not the duty of the department to the tax-payers to discontinue the practice. In Ottawa for 1921, where there was a very severe smallpox epidemic during the year, formaldehyde disinfection was entirely discontinued and very satisfactory results are said to have been secured by substituting for it disinfection by the spray system using liquid Izal in strength of 1 to 200. The expenditure was $250, as compared with $1,183. in 1920 under the old system of using gaseous disinfectants. Dr. Haven Emerson, Professor of Public Health, Columbia University in discussing the subject of "Epidemiology" in its relation to "Methods of Control of Communicable Disease" in the February issue of the *American Journal of Public Health*, speaks of the abandonment of gaseous fumigation recently as follows: "The abandonment of gaseous fumigation at the termination of those infections spread commonly through discharges from the respiratory and intestinal tracts and the substitution therefor of medical asepsis and the technique of concurrent disinfection in the sick-room, have been perhaps the most important of the many changes in procedure brought about by analysis of a long series of epidemiological studies, mainly bacteriological in character."

Investigations of Canned Meats.—A report on the bacteriology of canned meat and fish prepared by the food investigation board of Great Britain, recently issued, represents the first comprehensive study which has been made in that country of the bacteriology of canned food products. The board made a detailed examination of 323 cans of food, 246 of which were rejected. The most striking fact in the report is the non-sterility of cans which were externally sound. Less than 30 per cent. of these cans when examined were sterile; the percentage not sterile ranged from 36 for sardines to 100 for crab. Of canned meat, 63.6 per cent. of the cans were not sterile. This report, the London Lancet states, gives the death blow to the generally accepted conclusion that canned foods remain good because the processes of preservation by heat have sterilized them.—*Jour. Am. Med. Assoc.*, April 14, 1923.

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METHYLENE CHLORIDE IN ANAESTHESIA

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DURING the last two years interest has been revived in the use of methylene chloride (CH_2Cl_2) as an anæsthetic. For a time after its introduction into surgery in 1867 by Richardson, this substance enjoyed considerable favour in some quarters, but eventually it fell into disuse. Considerable confusion characterizes the early reports concerning methylene chloride because the material supplied in the trade evidently was not what it purported to be; one preparation at least was demonstrated to be nothing more than a mixture of chloroform and methyl alcohol. Consequently some of the statements concerning methylene chloride were in reality based upon the use of chloroform.

In 1884, Regnauld and Villejean[1] described experiments on dogs in which a pure preparation of methylene chloride compared with the action of chloroform. Their description of the action of the former is worth quoting:

"*After one-half minute of inhalation*—Commencing agitation; some barking; *One and a half minutes*—Dilation of pupil; beginning corneal insensibility, nystagmus; *Two minutes*—Abolition of corneal and palpebral reflexes; general insensibility; persistent nystagmus; *Three minutes*—Clonic movements; simulating running or better swimming; all four legs and tail participate; *Four minutes*—The same phenomena continue; inhalation discontinued. Animal loosed and left to itself. In spite of the insensibility the clonic movements in the muscles of legs, face, prepharyngeal region and diaphragm continue; *Six minutes*—Returning consciousness. Corneal reflex reappears. Contracture of the jaws persists; anæsthesia not over; *Seven minutes*—Epileptiform or choreiform attack; *Nine minutes*—Contracture of jaws and neck persists; *Eleven minutes*—Symptoms diminish. Animal tries to stand but its paws support it much as in the case of strychnine poisoning; *Twenty minutes*—Contracture of muscles of the neck; *Twenty-two minutes*—Animal cannot open mouth; strabismus; *Twenty-two to Thirty minutes*—Return to normal state. However, the dog whose jaws can now be opened, keeps its head lowered, does not answer the call of its keeper and seems under the influence of a kind of hallucination.

We have repeated this experiment with the exception that a cone was employed instead of a Junker inhaler, and can confirm the above statements in all essentials. The methylene chloride was administered for 20 minutes and at no time was there a degree of quietness or relaxation which would indicate its value as an anæsthetic.

In another experiment the animal was placed in a glass case into which air carrying methylene chloride vapour was blown (the apparatus was that usually employed in this laboratory for inducing ether anæsthesia in dogs). By employing a considerably higher concentration of methylene chloride than is necessary in the case of ether, a condition approaching ether anæsthesia was produced after about 15 minutes. The induction was marked by extremely violent muscular activity and the abundant secretion of saliva. The animal was then removed from the case and prepared for the measurement of blood pressure, the mixture of air and anæsthetic vapour being administered intrapharyngeally. For a short time the fairly complete anæsthesia continued, but thereafter restlessness and violent movements superseded to such an extent that the advisability of employing methylene chloride alone as a surgical anæsthetic was certainly not encouraged, though throughout the motor excitement obtaining the animal was insensible to pain. The blood pressure remained high for about twenty minutes, after which the concentration of the anæsthetic was increased to the limit and a typical chloroform death ensued.

Hellwig[2] has recently employed methylene chloride for narcosis in man. He found it "entirely unsuited for complete narcosis."

Following the stage of analgesia in which there was loss of consciousness and susceptibility to pain, a period of excitement developed such as is rarely seen after either ether or chloroform, and conforming well with the condition in dogs described by Regnauld and Villejean. In the attempt to overcome the excitement stage, an alarming condition developed. To be sure, the muscle tone relaxed completely, but simultaneously breathing became laboured, deep and extraordinary salivation began. There was deep cyanosis, sweating, maximal pupillary dilatation, and a rapid weak pulse. To avoid a calamity the narcotic was discontinued; respiration was stimulated mechanically and oxygen was given. Recovery was complete and the operation continued under ether. Hellwig then employed the substance for the induction of narcosis and as a substitute for ethyl chloride in which cases it was satisfactory. Recovery is not so rapid as in the case of ethyl chloride which may be of advantage in switching over to ether or chloroform. Methylene chloride appeared to be of especial value in connection with operations performed under local anæsthesia to obviate the undesirable effects of the operative procedure on the mental anxiety of the patient. It was found possible to maintain a condition of analgesia for hours without any subsequent ill effects on heart, kidneys, liver or lungs.

The animal experiments recorded indicated decided limitations to the use of methylene chloride, but in view of Hellwig's observations it seemed desirable to employ it clinically. Accordingly it has been used on a number of occasions during the past three months at the Montreal Maternity Hospital, and at the Montreal Western Hospital. In human subjects a stage of anæsthesia not seen with other agents was observed, that is, between the so-called first and second stages a period ushered in by analgesia occurs, which is characterized by anæsthesia without loss of muscular power. This stage is followed by one of severe excitement if the administration is continued. The limits of clinical application are therefore restricted to those effects which occur prior to the violent muscular activity. The desired stage can be attained by administering methylene chloride to a point at which consciousness is lost. Administration of the drug is then discontinued, but on the first sign of return of consciousness is renewed, so that by a process of intermittent administrations the pain of many procedures may be alleviated. We can recommend its use for the relief of the pains of labour in which the contractions of the uterus do not seem to be impaired, for the induction of anæsthesia prior to the use of other less agreeable anæsthetic agents, in all outdoor minor surgical procedures, for painful dressings, and particularly in dentistry for the extraction of teeth and the preparation of painful cavities.

REFERENCES

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(2). HELLWIG. *Klinische Wochenschrift*. 1922, p. 216.

Sudden Death in Scarlet Fever.—During a period of nine years (1913-1921), 2,322 patients with scarlet fever were treated at the Durand Hospital, with a total mortality of eighty-five, or 3.7 per cent. In two instances, death occurred suddenly and unexpectedly with only slight premonitory signs, and when each patient appeared to be on the road to convalescence. These two cases are reported in detail by T. F. Krauss, Chicago. The virus or toxins of scarlet fever seem to have an especially deleterious effect on the heart in some cases, as Welch and Shamberg point out. In those reported by Gouget and Deschaux, by Weil and Mouriquand, and also in the author's, direct action on the myocardium is apparent. Broadbent is inclined to believe that it has its action on the heart ganglions. No evidence was found in the author's case to bear out this view Since grave myocardial lesions may not be apparent clinically, and since in many of these cases death has followed some slight physical exertion, it would seem that absolute rest in bed is indicated in all cases of scarlet fever, especially during the acute stages, and more particularly in those in which one may suspect myocardial lesions.—*Jour. Am Med. Assoc.*, February 17th, 1923.

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Case Reports

POST OPERATIVE RECURRENT APPENDICITIS

R. O'CALLAGHAN, M.D., F.A.C.S.

The occurrence of two cases of recurrent appendicitis following operations within a few weeks is the excuse for writing a paper on a much discussed subject.

Case 1.—Girl, aged five, operated upon one year ago for acute appendicitis with abscess: Operation consisted at that time, as the child was very sick, in simple incision with drainage; ever since she has had a discharging sinus, (no fœcal matter). She was admitted into hospital from the country on account of a persisting sinus, with history of no pain since drainage. After keeping her in bed for three weeks on a low diet, the sinus closed, and the patient was to be discharged with a warning to the parents to notify the hospital at once if any development of pain occurred. Two days previous to going home she again took ill with typical signs of acute appendicitis. Operation was undertaken immediately and an acutely inflamed appendix embedded in adhesions was removed. The wound closed without drain and recovery was normal.

Case 2.—Boy aged seven; two years previously had what was diagnosed as an attack of appendicitis with abscess. He was kept in bed with poultices on the abdomen. The mass disappeared slowly and the child apparently got well. The doctor told the parents that the abscess had ruptured into the bowel. During the last six months he has complained of cramps low down in the abdomen.

Examination.—A fairly well nourished boy, who says he has crampy pains after eating and that it hurts him when his bowels move; no vomiting; abdomen moves freely; no scar; tenderness present over whole of lower abdomen; rectal examination reveals marked tenderness in region of appendix.

Diagnosis.—Appendicitis; operation was advised. Parents were told that although the abscess *had ruptured into bowel*, the appendix was still present.

Operation.—Right rectus incision. Caecum found drawn from middle line and fixed. On tracing appendix from base, the tip was found fused to rectum, if this term may be used. It was very difficult to be sure where to place the clamp owing to fear of entering rectum and about half an inch attached to bowel was left and cauterized. The wound was closed without drain. Recovery was normal.

There can be no doubt that as long as any portion of an appendix remains recurrent attacks must be feared. Sir Frederick Treeves reported in a large series twenty-four per cent. of recurrences following operation for abscess. The same author described further attacks in two cases with mere stumps left following previous attacks. Williams (*B.M.J.*, 1907) reports case of an acute attack in an appendix lying free entirely from caecum following a previous operation.

The question is, should the appendix be sought for and removed in these abscess cases? If the operator is careful and his technique good, the complete operation should be done in the greater number of cases. If the field is carefully walled off with towels before opening an abscess, there should be very little, if any, pus spilt into the general cavity. By making an incision approaching the peritoneum away from the abscess, and then placing a careful walling off, the results are usually very satisfactory, especially if one drain reaching to Douglas' pouch is left for twenty-four hours and another direct into the bed of removed appendix. The wall *should not be closed* too tightly and interrupted sutures should be used throughout.

After-treatment.—No purgatives. Morphia freely for restlessness. Five per cent. glucose in tap water by rectum; patient in Fowler's position, or better still, in case of children, have the head of the bed well raised. A great danger in leaving the appendix is that it is often very difficult to persuade a patient to return for further operation. A recurrence is nearly always fulminating with the presence of adhesions. As long as the diseased organ is left the patient is always in a precarious condition and liable to complications; secondary abscesses; pulmonary complications, and portal pyaemia. Faecal fistula, obstruction, ventral hernia are more apt to ensue due to the necessity of prolonged drainage. Convalescence is prolonged in

every case, and as my second case illustrates even a spontaneous rupture into the bowel does not mean a cure.

Conclusions

1.—In a very limited number of cases, when your patient is critically ill with other complications, simple drainage may be the saving of a life.

2.—With proper technique and care in handling the case it is better, in almost every case, to do the complete operation at once.

3.—In those cases in which only simple drainage has been done, the patient must be strongly advised to have the offending organ removed before any further trouble appears.

ANEURISM OF THE ARCH OF THE AORTA ASSOCIATED WITH ANEURISM OF THE COMMON CAROTID ARTERY

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Aneurism of the arch of the aorta is not uncommon and is one of the more frequent complications of syphilis. A. R. Lamb in his article in *Nelson's System of Medicine* states that aortic aneurism as a complication of syphilitic aortitis occurs in from twenty-seven per cent. to thirty-nine per cent. in two series of reported cases. Unfortunately, however, cases of aneurism are so frequently overlooked that the majority of diagnoses are made in the autopsy room and a physician, especially the general practitioner, may go through a life-time of practice without even seeing one case. Alfred Martinel in *La Presse Medicale* (October 16, 1920) reports twenty-nine cases of the aorta collected by him from 4,000 general examinations, which is one in one hundred and sixty cases. He explains that it is possible that this frequency was influenced by the fact that he specialized in diseases of the circulatory system, and he considers aneurism of the aorta a relatively rare affection. It is because of this reason and because of the interesting history connected with it that this case is reported.

A. B.—male, aged 44 years, came to my office complaining of slight dyspnoea and general weakness, and displaying a small pulsating swelling on the right side of the neck. He was a married man and had three children. The eldest was thirteen years of age, and alive and well. The second died at age of six months of unknown cause. The third, a girl of six years was also in good health. His wife had had no miscarriages or abortions. He was a merchant and had never done any hard manual labour. He was moderate in all his habits and did not drink or smoke. He said that he had had previously no serious illness; no rheumatism and no gout. He gave a history of having had a small painless sore on the glans penis about twenty years ago for which he received local treatment, but never had had a rash or secondary symptoms. His family history was negative. The date of the first appearance of the symptoms of the present illness is indefinite. He said that he had had a *cough* on and off for five or six years. He had never had much expectoration; each attack would last from a few days to several weeks, and the cough varied in severity. He attributed this symptom to "his catching cold" and on one or two occasions he visited a physician who confirmed the patient's diagnosis and prescribed him a cough mixture.

About the same time (1917) patient observed that on the right side of his neck there appeared *a small pulsating swelling* to which he paid no attention as there was no pain or discomfort. This pulsating swelling gradually enlarged until it became about the present size, that of a walnut. It is interesting to note that about the year 1918 the patient applied for insurance and was examined. The patient showed the examiner the swelling in his neck and was told that it was due to his frequent colds and was advised to take more exercise. *Dyspnoea* did not appear until the year 1920. The patient then noticed that moderate exercise brought on an attack of shortness of breath. This symptom had been gradually becoming worse of late. When he consulted me he could not walk upstairs without feeling very fatigued, and walking a distance of two blocks would compel him to stop and rest.

General weakness appeared synchronously with the dyspnoea and was becoming progressively worse. *Tachycardia* appeared comparatively late and only within the last six months did the patient complain of feeling his heart "pounding away." There had been a steady loss of weight; twenty pounds within the last three months. During the last six months the patient had felt much *gastric discomfort* described by him as

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"a heavy feeling," in the region of the epigastrium, particularly after ingestion of food and associated frequently with a feeling of nausea but no vomiting.

Examination. The patient appears to be well nourished and built, but somewhat anaemic and excitable. The skin appears yellowish-green in colour, not unlike that of pernicious anaemia. The scalp is bald. There is no visible rash. The lungs appear to be clear and, with the exception of a slight amount of emphysema, are apparently negative. Teeth, mouth, and throat are in fair condition. The abdominal wall is fairly well padded with fat. There are no masses to be felt and no rigidity. The spleen could not be palpated, but is apparently enlarged. The patient appears to be somewhat "highly strung," for the simple routine examination accelerated the pulse rate considerably. The pupils are equal, regular, react to light and accommodation. Abdominal reflexes are normal; knee-jerk, plantar reflexes, Oppenheim's and Gordon's reflexes are all normal; no ankle-clonus; Romberg's sign negative; no tremors. The *urogenital system* is apparently negative with the exception of two small scars on the glans. The inguinal glands are palpable. The epitrochlear glands could not be felt. There is apparently a slight enlargement of the right lobe of the thyroid gland. The *vascular system* is the system most affected. The patient's pulse since his admission to the hospital has varied from 75 to 120 per minute. Blood pressure, right arm $\frac{182}{87}$, left arm, $\frac{170}{85}$. The pulse rate varies slightly at times when taken at the different wrists, but the variation is very slight. It is of the typical water-hammer type. *The heart* is apparently greatly enlarged. On inspection no pulsation at the precordium could be noticed, but the chest in front, in the neighbourhood of the second and third ribs, appeared to be slightly full. The apex beat is heaving and diffuse and lies in the sixth intercostal space, about five and one-half inches from the midsternal line; the beat is visible in the epigastrium. A small pulsating mass, about the size of a walnut, could now be observed on the right side of the neck; the pulsation being synchronous with that of the apex. The superficial cardiac dulness is enlarged. The dulness extends above the level of the third costal cartilage about two inches to the right of the midsternal line, and laterally to the left about five inches from the middle line (see figure 1). A systolic thrill can be detected on palpation over the left second and third ribs close to the sternum. On *auscultation* murmurs are distinctly heard over both the aortic and mitral areas. The aortic murmurs are both systolic and diastolic in time.

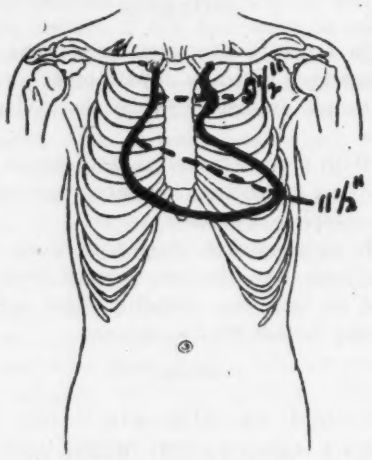

FIG. 1.—This figure represents an outline of the heart, as seen, when viewed under the fluoroscope.
Note the great dilatation to the right of the midsternal line. Also the aneurismal dilatation of the arch of the aorta.

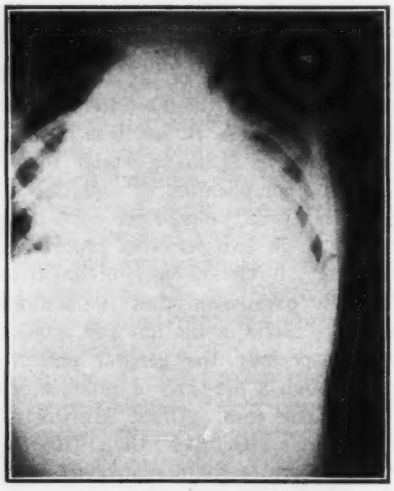

FIG. I.—This figure represents an outline of the heart, with the size of the thoracic cavity. The x-ray was taken by the orthodiographic method (6 feet 6 inch. distance). Note the dilatation to the right.

In the laboratory the following tests were taken: the Wassermann was positive +++. The blood count showed haemoglobin—100 per cent.; R.B.C.'s—5,696,000; colour index, 8; W.B.C.'s, 8,200; polymorphonuclears, 75 per cent.; lymphocyte, 25 per cent.; no poikylocytosis nor anisocytosis was observed. Urinalysis; dark amber acid; Sp.gr., 1,022; no albumen, no sugar; no

bile; microscopical examination was negative. The fluoroscopic examination was interesting; the heart was large and occupied practically the entire thoracic cavity. A tracing of the outline of the heart was made on the screen and its measurements are shown in the illustration (figure 1). A plate, which is here reproduced, was then taken (orthodiographic at 6½ feet distance), with the valuable assistance of Dr. Ferguson, of Qu'Appelle. It shows the actual size of the heart and also the enlarged aorta. The measurements of the heart according to the plate are as follows: length, 15+9.7=24.7 cm.; width, 8.3 cm. to right of midline, 13.4 cm. to left of midline; transverse diameter, 21.9 cm.; width at 2nd interspace, 9.5 cm.; bulb of the arch 9.5 cm.

The patient is now at absolute rest in bed, with weekly injections of mercury. Potassium iodide in the form of concentrated solution is also given grs. xl four times daily. The patient is feeling a little easier, but of course it is doubtful whether he will receive permanent improvement.

OTITIS MEDIA SIMULATING TUBERCULOUS MENINGITIS

From the Bulletin of the Harvey Club, London, Ont.

Baby R. 3 months, breast fed, 3 days languid, drowsy, no pain, nursing normally, temperature and pulse normal. No suggestion of blindness. Marked nystagmus, retraction of head, increased knee jerk. Babinski present. Family history, negative for tuberculosis

Fifth day—Temperature 100.6°, cerebral symptoms more marked, lumbar puncture, some slight pressure, relieved symptoms for six hours then projectile vomiting. Eyegrounds negative. Nursing stopped, rectal feeding.

Sixth day—Temperature 107.8°. Twitching, retraction of head and opisthotonus, retracted abdomen—tache cérébrale. One ear drum congested and paracentesis done.

Seventh day—Temperature 102°. Symptoms abating. Artificial feeding, restless and some crying though not hydrocephalic.

Fourteenth day—Slight twitching of eyes, otherwise almost normal. J. I. FERGUSON

GONOCOCCAL ARTHRITIS IN A NEWBORN MALE INFANT

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Gonococcal infection of the eyes in the newplicated by evidences of a blood infection. The case here reported is of interest for the reason that the patient developed an acute gonococcal born is a common disease, but it is seldom comarthritis eighteen days after birth.

Report of Case:—

C. E. J., coloured, born December 4th, 1922.

Family History.—The father had gonorrhea just before his marriage. The mother, who had previously been healthy, developed a vaginal discharge during this her first pregnancy. One week post-partum she developed a multiple arthritis which was diagnosed as gonococcal in origin. No history of miscarriages.

Personal History.—A full term child. Labour was prolonged and terminated by high forceps delivery. The infant was healthy at birth. It was reported that the eyes were treated with silver nitrate. The cord separated on the fourth day without signs of infection. On the fifth day there was a muco-purulent discharge from the right eye with slight conjunctivitis. This was treated by boric acid irrigations and cleared up within a week.

Present Illness.—On December 18th, at the age of 14 days, the infant was first seen at the Pediatric Out-patient Department of the Royal Victoria Hospital. The mother had on the same day been admitted to the hospital. Examination of the child was negative. He was seen again on December 20th, and was admitted to the hospital in order to continue breast feeding.

Physical examination on admission showed a normally developed, coloured, male infant weighing 8 lbs. 13 oz. Temperature normal. The skin showed physiological desquamation. No enlargement of the superficial lymph nodes. Head normal in size and shape. The conjunctivæ and corneæ were not inflamed and there was no discharge from the eyes. Ears, nose, and mouth normal. The heart and lungs were normal. The abdomen was normal, the stump

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of the umbilical cord was clean and dry, the spleen was not palpable. There was no urethral discharge. Joints not swollen or painful. The urine was normal. Smears from the eyes and urethra showed no pus or gonococci.

The infant was put to the breast every three hours. On December 21st, the temperature rose to 101° at 8 a.m. On December 22nd, the infant cried loudly especially on being moved, and on this day the temperature rose to 101.2°. It was noticed that the right wrist and hand were definitely swollen. The overlying skin was hot, tense and slightly cyanotic, and on palpation there was definite tenderness especially in the metacarpal region. No fluctuation present. On the following day the hand was more swollen especially along the tendon sheathes in the metacarpal region. There was also a swelling of the left knee joint with definite fluctuation, especially in the suprapatellar bursa. The skin over the knee was reddened and hot. The temperature was normal. Hot fomentations were applied to the wrist and knee. On December 24th, the knee joint was aspirated in the suprapatellar region by Dr. F. A. C. Scrimger, and several cubic centimeters of frank greenish pus were obtained. A smear of this showed numerous pus cells, but no organisms were found. The pus was cultured. W. B. C.'s 20,000: R. B. C.'s 4,400,000. On December 25th, the bacteriologist reported that a gram-negative deplococcus of the morphology of gonococcus had been grown from the pus. The organism was later proved to be gonococcus by its cultural characteristics. On this date the hand and wrist were somewhat less inflamed and the child's general condition was excellent. On December 26th, a radiogram of the wrist and knee showed no bone lesion. On December 27th, the knee joint was more tense—the fluctuation more marked and the subcutaneous tissue over the joint quite œdematous. There was definite swelling of the tendon sheathes along the inner hamstring muscles. On the following day, December 28th, as the knee showed no signs of improvement and pus was streaking through the puncture wound where the aspiration had been done, it was decided to open the joint. This was done by Dr. Scrimger. Two incisions were made in the suprapatellar bursa on either side of the knee joint. A large amount of thick greenish pus was evacuated. The incisions were left open and movement of the joint encouraged following the principle described by Willems. Smears from the pus showed a very few intra-cellular gram negative biscuit-shaped organisms. The pus was cultured. On December 29th, there was a free discharge of pus from the knee. The general condition of the patient was good, and the swelling of the hand was decreasing. The culture of the pus obtained on the previous day showed the presence of gonococci. January 2nd, the Wassermann reaction on the blood was negative, the gonococcus complement-fixation test was ++++. January 5th, there was free movement of the knee joint. The hand was still slightly tender and swollen. January 18th, the condition of the mother was good although the arthritis was still present. The Wassermann reaction on her blood was negative, the gonococcus complement-fixation test was ++++. January 20th, the discharge from the knee ceased. February 1st, the wound was dry and completely healed. W. B. C.'s 14,000. February 8th, no limitation of movement in the knee joint, but still slight thickening of the tendon sheathes of the hamstrings. Hand showed slight swelling in metacarpal region but no tenderness. Weight of child 10 lbs. 5 oz. Discharged from hospital.

Although bacteriological proof is lacking, it is reasonably certain that the patient suffered from gonococcal ophthalmia which ran a mild course and that this was the source of the generalized infection. Cases similar to mine have been reported on different occasions. Sokolow[1], of Moscow, in 1898 reported a case in which the mother developed gonorrhea during pregnancy. This was complicated by arthritis. A male child was born who developed gonococcal opthalmia, and on the ninth day showed arthritis of the left wrist followed by a similar condition in the left hip. After symptomatic treatment the condition cleared up. Brehmer[2], in 1905, reported a similar case in a male new-born infant. He died. Reinhard[3] in 1914, reported a case occurring in a male child. In this case, however, the mother noticed a urethral discharge shortly after birth. When seen by him on the twelfth day, the urethral discharge had disappeared, but the patient showed a typical left-sided gonorrheal epididymitis. On the following day this formed

a discharging sinus through the scrotum and the epidymus on the right side also became involved. On the fifteenth day there was an arthritis of the left knee joint. The infant died on the sixteenth day. He speaks of the rarity of gonococcal urethritis in the new-born.

The common avenue of infection in the new-born is the eyes. Marfan[4] states that less commonly there may be vulvitis, stomatitis and rhinitis of gonococcal origin. Kimball in 1903 reported a series of ten cases of gonococcal arthritis occurring in Holt's clinic in one year. These, however, were not in the new-born and the infection was not contracted at birth. In eight of these no local lesion could be found. He considered the probability of a stomatitis being the starting point of the infection. Most writers writers state that gonococcal arthritis in infancy runs a mild course and clears up without operation. If, however, frank pus is obtained from the joint, as in our case, an incision must be made and the joint drained. The good results obtained in the treatment of septic knee joints by the Willems treatment suggest this as the method of choice.

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Characterization of Various Forms of Endocarditis.—The bacterial and the indeterminate groups of cases of endocarditis are discussed by Emanuel Libman, New York. The indeterminate group consists essentially of two types of cases: (1) an atypical form of verrucous endocarditis, and (2) those cases usually described as terminal. By the atypical variety is meant the form of endocarditis in which the Aschoff body is said to be the characteristic lesion of the disease, the case being of rheumatic origin. Of cases clinically recognized as rheumatic fever and exhibiting at postmortem examination the typical verrucous lesions, only eighteen out of fifty-six exhibited Aschoff bodies. The clinical histories of the other thirty-eight cases made it clear that many of them at least were cases of true rheumatic fever. It is evident, therefore, that not all cases of rheumatic fever are accompanied by the specific lesion. Besides those cases that present the clinical picture of rheumatic fever and the typical verrucae on the valves, but not Aschoff bodies, there exists a group of cases presenting more or less the clinical picture of rheumatic fever (with perhaps a greater tendency to the occurrence of purpura and erythema), not showing Aschoff bodies at the postmortem examination, and accompanied by lesions on the valves which do not correspond to those usually found in rheumatic fever. Bacteria have thus far not been found in the vegetations of this group. It is possible that some of them represent unusual types of vegetation of rheumatic origin. In fatal proved cases of rheumatic fever studied by Libman, the tricuspid valve was involved in twelve of eighteen cases, or more than sixty-six per cent. Of fifty-six cases classed clinically as rheumatic and showing typical vegetations at the postmortem examination, but without Aschoff bodies, thirty-one were accompanied by vegetations on the tricuspid valves. In cases of acute bacterial endoca ditis, the right side of the heart (tricuspid or pulmonary valves, or both) was found involved in fifteen out of fifty-six cases, or 26.8 per cent. The mitral valve was affected more often than the aortic, the same holding true of cases of subacute bacterial endocarditis. In cases of the latter disease, the right side of the heart was involved once (tricuspid) in more than 100 hearts, and the lesion was slight. The atypical cases involve the right side of the heart frequent'y, in one instance the pulmonary valve being affected. This valve was not found affected in any definitely proved cas: of rheumatic fever. Terminal endocarditis appears to be a disease of the left side of the heart, the mitral valve being the usual seat of the disease. Other clinical phases of endocarditis are considered by Libman, and in closing he says that it is evident that the disease which was considered rare, subacute bacterial endocarditis, is now recognized as one of the common diseases. It was supposed to be a practically uniformly fatal disease. Now more and more often partial or complete recoveries are noted. Very mild cases exist, and there is a recurrent form of the disease. In other words, the interest is shifted toward the question of healing. It will be of the greatest value if an active campaign is undertaken for the purpose of preventing this as well as other forms of endocarditis.—*Jour. Am. Med. Assoc.*, March 24, 1923.

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Editorial

THE ANNUAL MEETING

FROM a perusal of the preliminary programme published in our last number, our members we hope will observe that the annual meeting to be held in Montreal, June 12th, 13th and 14th, promises not only to be most interesting but in some features to be unique in the history of the Association. For some years it has been felt that the programme should consist of more than the presentation of papers which could be read in the *Journal* by stay-at-home members; that a definitely clinical aspect should be given to the meeting. Another opinion oft-times expressed has been to the effect that the general meeting should be divided into numerous sections each dealing with a special department and each attracting to its sessions members especially interested in its special branch of medicine. The local committee has endeavoured to meet these views and has at least introduced the thin end of the wedge.

Clinical sessions will occupy two forenoons of the meeting and will also be definitely sectional in character. The general sessions will be held in the large auditorium in the Mount Royal Hotel and the programme for each session has been carefully designed to interest all branches of the profession, with the exception, perhaps, of those specializing in the eye, ear, nose and throat. Industrial medicine, a very live subject at the present time, and destined to become more and more important, is dealt with not only generally but specifically on the forenoon of the first day.

A question of national importance to Canada is that of an increase of population. Public bodies, political and otherwise, are constantly debating this question and see in it the only remedy for the development of the natural resources of the country, and for the solution of the railway and taxation problems. The Thursday afternoon symposium on "The Problem of More and Better Children" will be the Association's contribution to this vexed question, discussing, as it were, "Home Production versus Immigration." On Wednesday afternoon there will be presented by specialists in each subject, a series of short authoritative papers on "Recent advances in the Treatment of Organic Disease." These papers will sum up in succinct form the possibilities of treatment in conditions constantly met with by the general practitioner. Added to the above will be the presentation of interesting and valuable addresses or papers by Sir Robert Jones, Wm. J. Mayo and Sir William Taylor. The eye, ear, nose and throat specialists have seized this opportunity not only to present a sectional programme throughout the duration of the meeting, but to definitely and permanently establish themselves as a section of the Association with their own officers. The Canadian Society for the Study of Diseases of Children will hold its first annual meeting on the Friday and Saturday immediately following the general sessions of the Association. The affiliated Societies of Anaesthetists and Radiologists are turning out in force and the Medical Protective Association will hold its annual meeting at a date which will be announced in the final programme.

So much for the scientific side of our annual meeting. But what of the chief function of the Association, that of safeguarding and improving the welfare of the medical profession and through it of the Canadian people? The Committee on Inter-provincial Relations has been active and will present a report for consideration. Dr. M. T. MacEachern, Chairman of this Committee, will deliver an illustrated address upon what the

Canadian Medical Association stands for, and the Committee on Federal Legislation has met and has a report ready.

A service bureau, under the control of Dr. MacEachern and Dr. Routley, Acting General Secretary, will be maintained in a spacious room adjacent to the registration and meeting rooms, for the purpose of discussing with members and potential members, the activities and privileges of the Association. The "Question and Suggestion Box" will be featured. Finally, a financial report will be presented which it is hoped will be gratifying to all the members as it is to those who have had the charge of our finances. Space forbids any comment upon other features of the meeting. The reader is referred for these details to the programme itself.

BALLANTYNE AND THE NEW MIDWIFERY

THE need of pre-natal care for the pregnant woman is now so universally accepted that it is difficult to believe that it is an idea with a history of but one generation, and due in no small measure, to one, who from a worldly standpoint, was comparatively undistinguished. On January 3rd of this year there died at Edinburgh, Professor J. W. Ballantyne, Lecturer to Women Students at the University of Edinburgh, to whom we owe, if not the phrase, the important underlying thought, for which the English speaking world owes a debt that can only be repaid by the homage of children yet unborn. For a generation Ballantyne's absorbing idea was the necessity for the study of intrauterine conditions during foetal life, and it would seem as if death had taken him at the moment when his unrealized dream was becoming a reality to the more enlightened members of the medical profession.

Ballantyne's first works dealing with ante-natal pathology date back to 1892. In 1908 the writer visited him in Edinburgh with a letter of introduction from a distinguished obstetrician, in whose opinion Ballantyne was one of the men particularly well worth meeting. The visit was a great surprise to Ballantyne, who expressed a most simple delight in the way he had been singled out as an outstanding figure by the writer of the letter, and to his visitor, who found an obstetrician caring comparatively little for the problems of labour but intensely interested in the anatomy and physiology of the foetus up to the time of birth; an idea so unusual that its distinguished propounder seemed to have been forgotten in the race for university preferment, and who had to complain that so much of his day was occupied by the trials of daily practice.

In 1914, the writer visiting Edinburgh for the second time in company with a number of American obstetricians, asked as did others for Ballantyne but none of us had the opportunity of meeting him. Indeed, to the time of his death, Professor Ballantyne had made comparatively little mark in university circles in Edinburgh; certainly his university standing had not placed him in a position to avoid the drudgery of practice and enable him to devote more of his time to his scientific work.

A recent editorial in the *British Medical Journal*, April 14, 1923, commenting on an address delivered at Nottingham shortly before his death, attempts in some measure to atone for this neglect and accord to this pioneer praise that might have helped more had it been given during his lifetime.

The address itself is brief; there is very little of the ego, but very much of that excellent English based upon a sound classical education for which all Ballantyne's writing was remarkable. The title "The New Midwifery: Preventive and Operative Obstetrics" is more or less explanatory, but herewith is a brief summary.

The new midwifery is essentially pre-

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ventive and reparative, and in a sense is new only from the point of view of disregard of time limit, adding to the preventive and reparative care *at the time of labour*, ante-natal and post-natal supervision. It is less dramatic, less spectacular, but infinitely more comfortable and less exacting. It is wrought with possibilities of life saving; of disease and disability preventing; it brings new responsibilities but new triumphs.

Its acceptance is imperative, since the National Insurance Act, the Notification of Births' Act, and the Midwives' Acts for England and Scotland, have brought the Maternity Hospital directly into association with organizations formerly more directly associated with Public Health, demanding therewith a new responsibility for care during pregnancy and after labor. The extent of this change is remarkable, calling as it does for the development of ante-natal clinics, ante-natal wards, dental clinics, venereal disease clinics, venereal disease wards, post-natal clinics for the teaching of mothercraft to women, special wards for premature babies, and beds for reconstructive (gynaecological) work, side by side with the lying-in wards. Under the new system the Maternity Hospital must either expand tremendously, or be in close association with the facilities of a large General Hospital and still more closely allied with government supported organizations concerned with public health and venereal disease. In England the Child-Life Investigation Department of the Medical Research Council is the supervising body. "The pregnant, the parturient, and the puerperal woman and her infant have passed under the aegis of the public health authorities just as surely as the fever patient, the tuberculous patient, the insane, and the school child."

What is the result? Primarily, a tremendous amount of relief from anxiety for the mother during pregnancy, and after her delivery. Not only relief from anxiety, but relief of actual suffering which for many years women have believed to be indissolubly connected with child bearing. There will be also greatly improved statistic results in the toxaemias of pregnancy; in syphilic disease, and in heart disease associated with pregnancy. "The new idea is to cure any disease which complicates pregnancy or so ameliorate it that the pregnancy may continue and a living child be born to a restored mother.....and to write down so-called therapeutic abortions as a failure." Moreover, the number of normal labours will be increased, abnormal presentations or positions will be manifest before the onset of labour, so that there will be a decrease in the number of still births, and a fall in the maternal death rate;the greater, owing to the spread of these methods among the public at large.

While the change from old to new has been a matter of a generation, its most marked advance was during the War when the value of a virile population made itself manifest. Altered conditions have been recognized by the General Medical Council who are undertaking concentrated teaching in associated subjects; diseases of women, obstetrics, and hygiene, having in mind the above mentioned thought that all diseases in pregnancy should be cured in pregnancy without the artificial ending of the pregnancy. The practitioner must learn to make at least as thorough an examination of a pregnant woman as of a candidate for life insurance, and must follow up his patient with a disregard for the time involved By so doing he will obtain as a result a satisfactory decrease in his cases of toxaemia, and his destructive operations. Eventually he will learn to make use of the facilities which are daily being added to institutions in the departments of hygiene and preventive medicine. He will also appreciate the important rôle played by venereal disease in all its aspects with abortion and in the causation of still births

In the course of its comment on the address the *British Medical Journal* notes that the national importance and significance of his ante-natal observations were for many years not fully realized especially as regards the loss of population from intrauterine disease. It points out that Ballantyne has shown that a large and

unsuspected proportion of foetal deaths during birth are due to weakness from ante-natal disease, or prematurity, or the non-recognition of the relative size of the child in the pelvis of the mother. This is his so-called "intra-natal mortality". It is also noted that Ballantyne in his life time conclusively demonstrated the value of his ante-natal researches by reducing the still birth mortality of his cases fifty per cent. The various points emphasized in this address are worthy of careful consideration by every practitioner interested in midwifery. It is not essential that one should be in agreement with all of the methods suggested by Ballantyne, but it *is* essential that practitioners at large should realize the trend of modern obstetrics and the necessity for readjustment of many of the methods in current use with those dictated by his policy of progress. H. M. L.

MENINGEAL HAEMORRHAGE OF THE NEWLY BORN

THERE is general agreement that the most frequent cause of death in the new-born infant is intracranial hæmorrhage. This has been demonstrated by Warwick and others by postmortem examination of a series of infants who died just before or just after birth. While trauma and asphyxia have been considered the chief causes of the hæmorrhage, a certain proportion of cases is undoubtedly due to hæmorrhagic disease of the newborn. Few observers now agree with Virchow in considering the hæmorrhage secondary to an infective meningo-encephalitis.

Sixty years ago Little, an orthopedic surgeon, invited his obstetric friends to co-operate with him in an endeavour to discover the cause and means of prevention of spastic paraplegia. Since that time many investigators have demonstrated the relationship between birth injuries with meningeal hæmorrhage and so called Little's disease.

Cameron and Osman of Guy's Hospital have recently contributed an interesting article on "The Late Results of Meningeal Hæmorrhage in the Newly Born." These authors emphasize the importance of distinguishing between children in whom the paraplegia or diplegia is the result of defective cerebral development, and those in whom it is due to meningeal hæmorrhage. The whole personality of the former group is of a low type; they are idiots or imbeciles and will always remain so. The hæmorrhagic group, however, are capable of a high degree of mental development, and show great perseverance in an endeavour to overcome the handicap which retards their progress.

After the primary symptoms which develop almost directly after birth, these children who survive pass through a period of latency before the evidence of spastic paralysis becomes manifest. The explanation of the latent period is found in the development and physiology of the central nervous system. All movements of the normal infant are at first reflex in character. The psychomotor centres of the brain are not developed and the nervous mechanism at work is almost entirely that of the medulla and cord. Lesions of the cortex for this reason are relatively silent and only come into play at a later date, as compared with lesions affecting the medulla which are immediately fatal. As education and development in infancy proceeds almost entirely through the sensorimotor paths, these children are as a consequence greatly retarded and are often mistaken for imbeciles, when in reality they possess normal intelligence and in later years may learn with great rapidity by means of the eye and ear. The physician must therefore carefully distinguish between those cases which are primarily mental defectives and those who are only temporarily retarded by means of their sensorimotor handicap. The latter are capable of high intellectual development albeit they remain crippled for life, even as was the fate of Lord Byron. L. M. L.

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THE PROBLEM OF THE FEEBLEMINDED

IN a pamphlet recently issued by the Toronto Mental Hygiene Committee the problem of feeblemindedness in Toronto is discussed. The seriousness and the size of this problem is very clearly and concisely set forth. That the facts which are presented are correct cannot be doubted as they are vouched for by some of the leading psychiatrists of Canada. The facts are also not pleasant reading and they become worse when we know that what is true of Toronto is true of all Canada. The surveys conducted by the Canadian National Committee for Mental Hygiene have shown that not one section of Canada is exempted from this problem. It is a problem which has been long neglected by our Federal Governments, Provincial Legislatures and by the medical profession.

One paragraph in the above mentioned pamphlet is of especial interest at the present moment when everyone is demanding a larger population for Canada. It is entitled "Mental Defect and Child Immigration" and reads in part as follows: "In one clinic in Toronto alone, 128 cases of adults who were brought over by one organization as child immigrants were examined; 27 of these 128 were socially diseased; 42 were confirmed prostitutes; there was a total of 94 illegitimate children born of them, and on examination, 95 per cent were found to be abnormal . . . It would seem, . . that a good many children are slipping past the immigration authorities, and later constitute a very serious problem to Toronto."

What is true of Toronto is true of every part of Canada and especially of the Western provinces which receive the largest percentage of our immigrants. It is true that we need population but do we want immigrants whom we will, after a few years, have to support in feebleminded institutions, mental hospitals or epileptic farm colonies? It may be stated by some that we must allow a certain number of the high grade feebleminded persons into Canada in order to have a certain class of unskilled labour done or that a feebleminded woman might be able to do domestic work satisfactorily when it would not be possible for her to pass the intelligence tests. All this may be perfectly true and it is a large as well as difficult problem to solve. Not only is the problem of economics involved but but also that of eugenics. What is necessary is for the Immigration Department to consult the leading medical men familiar with this problem and then formulate a set of rules for the guidance of the Immigration Medical Inspectors. Another method in all cases of doubt would be to allow all suspected persons in under bond as is permitted at present, but increase the number of medical men who could examine these persons to see if they were turning out good citizens. It is a large problem which should be taken up vigorously by the medical profession who should insist on effective measures to promptly prevent the influx of feebleminded persons in Canada. The immigration side of the problem is most important but what can be done with the feebleminded at present in Canada? This side of the question has also been largely neglected by the medical profession, although there are signs that it is slowly being recognized as a large field of preventive medicine, through which the spread of venereal disease, the birth of unhealthy children, the increase of crime and juvenile delinquency, etc., can be prevented. Institutions for all the feebleminded in Canada could not, even if it were necessary, be built. We will always have to have institutions for a certain type of feebleminded, but a large number of them if given the right kind of instruction early in life and proper supervision later will never have to be committed to an institution. An adequate plan should include identification, registration, instruction and supervision of all feebleminded persons. Identification could be accomplished through examination of all school children, particularly in those provinces where compulsory education is in force, and through

the establishment of mental clinics in all important centres of population. Registration would be easily obtained after identification had been assured. Instruction would mean the building of institutions for a certain number of feeble-minded, especially the low grade and anti-social types. The best method of making these persons into good citizens, however, is through the formation of special classes in the public schools. In these classes they would be taught according to their capabilities and not as if they were of normal intelligence.

Furthermore trade schools should be established for children over twelve years of age. It has been found in cities where these special classes have been organized that as high as 75 per cent of the children become self-supporting. The Western provinces were the first to realize the seriousness of the problem of feeble-mindedness and they have taken a very advanced step in the care of these people. Toronto and other parts of Ontario have also appreciated the problem and are providing means to combat it. To-day our institutions for the insane, feeble-minded and epileptic are crowded with persons of foreign birth who should never have been admitted to Canada. It is a question that should be thoroughly studied by the medical profession and through it every provincial government should be made to realize its responsibility in this serious problem. G. S. M.

Editorial Comment

NEW SERVICES IN PREVENTIVE MEDICINE THAT MAY BE RENDERED BY LIFE INSURANCE COMPANIES

In an address presented before the Life Underwriters of Ontario, Dr. H. W. Hill, Dean of the Faculty of Public Health in Western University, made a strong plea that Life Insurance companies should undertake more in the way of preventive medicine for their policy-holders than they are at present attempting. Three well known professions, namely, the medical profession, public health officers, and life insurance companies, are all peculiarly interested in the prevention of disease, in the promotion of health, and in the attainment of a good old age. The prevention of disease rather than the cure of the sick is constantly looming larger in the medical mind. The important interests of insurance companies, like the real interests of the physician, lie in securing longer life with better health for their clients. The longer the life of the policy-holder and the better his health, the less becomes the expense of insurance. Thus life insurance, the medical profession, the department of public health, and the general public have a mutual interest in conserving life and the health of the community. Life insurance, however, was the first to recognize not only this humanitarian aspect but also the economic advantage of maintaining the health and in this way of prolonging the life of their policy-holders.

There are three definite ways in which life insurance companies can act and should act for their own benefit, to the advantage of their policy-holders and also of the medical profession. These three ways are as follows: 1.—Education of the public in matters relating to public health and protection from disease; 2.—Medical supervision by methodical examination at stated intervals of individual policy-holders; 3.—Standardization of community health activities. These three definite steps here proposed for the insurance companies to follow are intimately connected and are all at bottom of an educational character. At present education along these lines is being attempted by pamphlets, but it can be done better, more directly, and more efficiently by demonstration, by personal interviews, and by visits to domiciles through the aid of a visiting nurse. The insurance public health nurse should not wait for disease to develop before advice and relief are given, but should visit regularly all policy-holders, those well and those ill, seeking to

maintain or improve health by advice on matters of hygiene and sanitation. The insurance public health nurse cannot cover this great field alone, although as an investigator, adviser in the home, and discoverer of early disease symptoms, the well trained nurse is invaluable; the insurance public health physician is equally necesary. He should provide for treatment, preventive and curative, at the earliest incipient stage of disease. Such work has been done hitherto on a voluntary irregular basis, without uniformity. Dr. Hill proposes it be made a definite item in every policy-holder's life. Here is public duty of the highest type, maintaining the financial prosperity on which rests the success of public health effort and yet combining to lessen its cost and widen its use by the public. Canadian life insurance companies are vitally interested in all this; in prolonging life, and in preventing disease in the same way as fire insurance companies are in preventing fires. They should no longer neglect this great field. Life insurance should investigate the machinery in each community for promoting health and preventing disease, and demand public health protection in accordance with the findings established. No such service is at present attempted by any organization, official or otherwise. Fire insurance societies could not operate without this precaution, which life insurance companies wholly omit. Here we have a direct business proposition, tying up annual physical examinations and public health problems with life insurance. In this way we place the public health of the future on a sound economic foundation; only the financial knowledge and organization, and the acquaintance with the actual facts of life, death and disease, possessed by life insurance companies can solve its problems.

THE Federal Department of Health has just issued a brochure on SANITATION dealing with the subject of sewage treatment for isolated houses and small institutions where municipal sewage system is not available. The urge for such information has been so insistent and, having in mind the health and welfare of the people, it was considered advisable to have the subject dealt with in a scientific and thoroughly practical manner. The publication is generously illustrated, emphasizing the application of the advice given.

Homesteaders, summer cottagers and trustees of small institutions, are strongly advised to avail themselves of the information contained in this publication, which can be obtained free on request from the Deputy Minister, Department of Health, Ottawa.

The Role of Transillumination in Diseases of the Nasal Accessory Sinuses.—In order to appreciate the valuable aid obtained by transillumination in diseases of the maxillary and frontal sinuses, Edward L. Pratt, New York, suggests that these points be kept in mind: (1) It must be used as a routine part of every nasal examination. (2) Its evidence is not infallible, but must be correlated with the other signs of sinusitis—the history, the presence and location of pus in the nose, and the appearance of roentgenograms. (3) Positive findings always merit full investigation, even puncture and irrigation. (4) Negative evidence on transillumination does not rule out sinusitis in the presence of other positive signs. (5) Due allowance must be made for the degree of illumination to be expected in patients with thick bones as compared to fair skinned, thin walled patients. Patients who have had one or more previous attacks of sinusitis with a resultant thickening of the mucous membrane lining the sinus will often illuminate with varying degrees of darkness, even though no secretion is present in the sinus. When used in this manner, the accumulated experience obtained by routine daily use will prove transillumination to be a most valuable aid (1) for the general practitioner untrained in nasal examination; (2) as an indication that something more than the ethmoid sinuses is involved; (3) as a check on the interpretation of roentgenograms, and (4) as an indication of the progress of treatment.—*Jour. Am. Med. Assoc.*, April 21, 1923.

Men and Books

SIR CHRISTOPHER WREN (1632-1723)

THE present twelvemonth is particularly memorable in its anniversaries. Three hundred years ago the First Folio of Shakespeare was published; two hundred years since, on February 25, 1723, died Sir Christopher Wren, the greatest English architect, though excelled in some particulars by Inigo Jones; a hundred years ago Pasteur was born; and within the same year Edward Jenner, the discoverer of vaccination, was buried.

Wren was the son of the Rector of East Knoyle, Wiltshire, and was born there in 1632. He was educated at Westminster and in 1649 entered Wadham College, Oxford, graduating B.A. and later M.A. (1653). At the early age of twenty-five he was appointed to the chair of astronomy at Gresham College, London, and in 1660 was elected Savilian professor of astronomy at Oxford. In 1665 he visited France for some months. Although Wren had built a doorway at Ely Cathedral in 1663, and his model for the Sheldonian Theatre at Oxford had been submitted and approved in the same year, the saying that he "went to Paris an astronomer and returned an architect," is perfectly true. The great fire of London occurred in 1666, and Wren was appointed "surveyor-general and principal architect for rebuilding the whole city; the cathedral church of St. Paul; all the parochial churches.....with other public structures." His plans for doing these things were not carried out in full, but he did build fifty-two churches, many of the halls of the City Companies, and he also designed the new house of the Royal College of Physicians in Warwick Lane after that in Amen Corner had been burnt. It would seem to one visiting London that much of its charm is due to the skill and mastery in building of this one man. Wren died at the age of ninety-one, and lies buried in St. Paul's, where, only the other day, a memorial service was held in his honour. The epitaph: "The builder of this church and city, if you would see his monument look around," expresses for all time the regard in which he was held.

Wren, however, was much more than a great designer and builder, and his interest for us lies also in the fact that, before he became deeply engrossed in his life's work, he was a "prodigy by reason of his scientific attainments." During the interval between leaving school and going up to Oxford, this young lad was chosen to assist Sir Charles Scarborough, a close friend of the immortal Harvey, in his demonstrations, in making anatomical preparations, and in various experiments for his lectures on anatomy at Surgeon's Hall. Wren's mathematical knowledge was quite remarkable, even at a tender age, and he was much interested in the mechanics of muscular action, later forming models in pasteboard to illustrate the motion of muscles. These were lost at the fire of London.

When Wren was at Oxford there was a galaxy of talent devoted to the study of natural philosophy by means of observation and experiment, and these men, who had met before the Civil War in London, used to hold discussions in a room of Wadham College. Later, in 1660, they founded the Royal Society. Amongst those with whom Christopher Wren associated were, Dr. Wilkins, Warden of Wadham, Robert Boyle the chemist, Richard Lower and John Mayow physiologist, and Thomas Willis the anatomist and physician. Sometimes when Wren was lecturing at Gresham College in London, the meetings were held in his rooms there.

It was no age of specialism and all branches of natural philosophy lay in their rightful field of inquiry. Dr. Thomas Sprat in his *History of the Royal Society* (1667), writes of Wren: "He was the first author of the Noble Anatomical Experiment of Injecting Liquors into the Veins of Animals. An Experiment now vulgarly known; but long since exhibited to the Meetings at Oxford, and thence carried by some Germans, and published abroad. By this Operation diverse Creatures were immediately purg'd, vomited, intoxicated, kill'd, or revoked, according to the quality of the Liquor injected: Hence arose many new Experiments, and chiefly that of Transfusing Blood, which the Society has prosecuted in sundry instances, that will

probably end in extraordinary Success." Wren used such drugs as scammony, opium, and wine. He was a man of ideas but it is not likely that he did more than suggest the possibility of direct blood transfusion. It was left for Richard Lower to do this from one dog to another in 1665, and the silver cannula he employed is depicted in "table 7" of his *Tractatus de Corde*, Amsterdam, 1669 in 8°.

Christopher Wren was a fine draughtsman and he made the illustrations for the *Cerebri Anatome*, (1664) of his friend Thomas Willis. He was also the first man who made drawings from the microscope.

Wren was an inventive genius and in the breadth of his work reminds us of Leonardo da Vinci. Hook wrote of him: "I must affirm that since the time of Archimedes there scarce ever met in one man in so great a perfection, such a mechanical hand and so philosophic a mind." He invented a machine, drawn by a horse, for planting seeds in fields, a method of making fresh water at sea, a way of purifying and fumigating sick rooms, a means of curing smoking chimneys, a self-registering weather-cock, a self-registering thermometer. He constructed a model of the eye as large as a tennis ball with the humours truly and dioptrically made, invented a new way to grind glasses, invented new musical instruments, and designed engines of war.

Even after Wren was devoting nearly all his energies to architecture, he writes to Sir Charles Scarborough about various anatomical dissections and of the operation of splenectomy in a dog. He was president of the Royal Society from 1680 to 1682 inclusive. Here was a man busy rebuilding London, but in his inaugural address he exhibits his enduring enthusiasm for scientific medicine and some of his remarks sound strangely modern in our ears. He urges the physicians of the society to keep an account of epidemic diseases and to note the effect of weather upon medicine, and, instead of relying on the vanity of prognosticating, he wished men to have the patience for some years of registering past times, "which is the certain way of learning to prognosticate." Wren also saw the importance of biochemistry: "Thus in the body of a man if we consider it only mechanically we may indeed learn the fabric and the action of the organical parts, but without chemistry we shall be at a loss to know what blood, spirits, and humours are, from the due temper of which (as of the springs in the barrel wheel) the motions of all parts depend."

Had this man with the quality of genius—the capacity for taking pains—been able to continue his philosophical disputes, he surely would have secured for himself a scientific position higher than was obtained by any of those of his time, with one exception—Newton

A. M

Alcohol and Disease.—Since the debate regarding the prohibition of the manufacture and sale of alcoholic beverages has hinged largely on the scientific aspects of the liquor problem, every pronouncement on the subject is awaited with interest. Recently a statistical report regarding the possible influence of alcohol on the prognosis of pneumonia in a large municipal hospital was published in *The Journal*. The data for nearly 3,500 cases of lobar pneumonia showed, with reference to the patients' habits of indulgence in alcoholic drinks, that the mortality was higher in moderate users than in light users or abstainers, and that the mortality in excessive users was much higher than in moderate users. It seems important to define the limits of interpretations to be made from these data. The investigators themselves insisted that their findings demonstrate only what a harmful effect the use of alcohol may have on the course of a disease. They have no bearing on the question whether legislation has or has not diminished the prevalence of drinking. In commenting on the paper referred to, a prominent newspaper pointed out further that the statistics have no bearing on the possible use of alcohol in therapy. It cannot be too strongly emphasized or too frequently reiterated that alcohol, like many drugs, may have a usefulness in medicine which by no means justifies the assumption that it is of equal value in dietetics. Strychnine is recognized as a helpful drug and also as a deadly poison. Hydrochloric acid can act as a violent corrosive; it may also facilitate gastric digestion. The contradictions are in the statements of persons, and not in the facts of science.—*Jour. A.M.A.*, April 7, 1923.

Correspondence

THE IMPORTANCE OF POSTURE, IN THE PREVENTION AND TREATMENT OF CONSTIPATION

To the Editor: Sir,

Although we have in the alimentary canal a long muscular tube in which many different chemical activities are carried on, to assist which effective propulsive action by the muscular coat is a necessity. In many this muscular action is defective and I am of the opinion that it can be considerably assisted by the force of gravity if we properly recognize the direction in which gravity can act.

In the small bowel the contents of this canal are so liquid that propulsion is easily effected. By the time the contents reach the transverse colon they have become distinctly inspissated. Assistance to the movement through this portion of the bowel may in my experience sometimes be obtained by gravity if the person will lie during the later hours of the night on his left side; upon rising in the morning gravity may again become of assistance in the descending colon and possibly in the sigmoid and rectum. The simple maxims I give my patients in the treatment of constipation are the following: 1.—To imbibe lots of fluids and fresh air, and eat good, coarse food; 2.—To take vigorous abdominal exercise, and to assist the normal propulsive movement of the bowels by sleeping the first part of the night on the right side, and during the later half on the left.

Franklin, Man. J. R. B. Fraser, M D.

Specific Treatment of Hay-Fever During the Attack.—In three cases of autumnal hay-fever, with sensitization to short ragweed, reported by Warren T. Vaughan, Richmond, Va. (*Journal A. M. A.*, Jan. 27, 1923), the patient had been desensitized by the routine commonly followed, both parenteral injection and nasal installation being employed. One patient developed hay-fever in a very severe form; while two were decidedly improved but not symptom free, after the onset of the pollen season. In all three cases, symptoms cleared up almost entirely following daily subcutaneous injections of small amounts of ragweed pollen extract. A fourth patient, a boy who had developed hay-fever for the first time and had had no preventive inoculations, did equally well following daily subcutaneous treatment. The frequency of inoculations was gradually reduced in this case, the patient remaining greatly improved. According to the method proposed, patients presenting themselves for the first time during the pollen season, and without previous treatment, may be treated by specific measures, with considerable hope of relief.—*Jour. Am. Med. Ass.*, Jan. 27, 1923.

Congenital Atresia of the Esophagus, with Esophagotracheal Fistula.—In one of the cases reported by Edward Weiss, Philadelphia, there was atresia of the esophagus, the upper portion being dilated and ending in a blind pouch about 1cm. above the bifurcation of the trachea. The lower segment was smaller in diameter and entered the trachea posterolaterally just above the bifurcation. A probe passed into the upper end of the trachea entered the lower segment of the esophageal and passed readily into the stomach. In the second case the esophageal anomaly was almost identical with that noted about 1 cm. above the bifurcation of the trachea, and the lower segment opening into the treachea directly opposite the point at which the upper segment of the esophagus abruptly ended. In the third case the roentgen-ray examination revealed a complete stenosis of the esophagus at the level of the third dorsal vertebra. The esophagal anomaly disclosed at necropsy was nearly similar to the other two.—*Jour. Am. Med. Ass.*, Jan. 6, 1923.

XUM

Abstracts from Current Literature

MEDICINE

Influence of Various Symptoms in the Prognosis of Pulmonary Tuberculosis. Trudeau, F. B., *Jour. A.M.A.*, March 24, 1923.

By obtaining the after-history (up to 1918) of 980 patients admitted to the Trudeau Sanatorium the author has been able to judge of the prognosis of certain symptoms. The terms "well," "living," "dead" and "unknown" are used in the tables. The mode of onset (catarrhal, insidious, pleuritic, febrile, and with haemoptysis) plays no part in determining the future course; the "wells" varying from fifty-eight to sixty-eight per cent. and the deaths from twenty to twenty-seven per cent. The presence or absence of tubercle bacilli in the sputum is very important in the question of prognosis: fifty per cent. of the patients whose sputum was positive are well and working as against seventy-nine per cent. among the negative cases; the mortality amongst the "positive" cases after a period of from five to eleven years is thirty-two per cent. as compared with six per cent. amongst the "negative' ones.

It is surprising that definite haemoptysis (as indicated by the spitting of one teaspoonful or more of blood) was found not to warrant such a grave prognosis as had been thought. Sixty-one per cent. of the "positive cases" are well and twenty-three per cent. died; sixty-five per cent. of the "negative" cases are well and twenty-two per cent. died. A gain in weight augurs well, for sixty-seven per cent. of those patients who gained are well and twenty per cent. died; whilst fifty-seven per cent. of those who lost in weight are well and twenty-seven per cent. died. In considering the prognosis of a rapid pulse only those cases were classed as "positive" where there was a pulse rate of 90 or over, persisting for five consecutive days without any other cause beyond tuberculosis being found. Sixty-nine per cent. of the "negative" patients are well and working, and only sixteen per cent. are dead; forty-nine per cent. of the "positive" patients are well and thirty-eight per cent. are dead.

Fever (i.e., temperature of 99.5°F. for five consecutive days without any apparent cause other than tuberculosis), which generally goes with increased pulse rate, is the gravest of all the symptoms. Forty-three per cent. of febrile patients have died and forty-five per cent. are well; sixty-eight per cent. of the febrile patients are well and working and only seventeen per cent. are dead. Seventy-eight per cent. of those who had incipient tuberculosis have resumed normal life while less than ten per cent. have died. There are twenty-five per cent. of "wells" amongst those who were far advanced cases. Out of 980 patients who were admitted to the sanatorium seventy-five per cent. are well and living at a date varying from five to seven years after discharge, and two out of every three are earning a living.

ARCHIBALD MALLOCH

Sudden Death Following Thoracentesis. du Bray, E. S. *Am. Jour. Med. Sc.*, March, 1923.

The author reviews briefly previous literature on the subject and the article contains a good bibliography. Capps has shown by ingenious experiments that the healthy pleura tolerates irritation, whereas an inflamed pleura reacts to it, whether mechanical or chemical, by well marked reflex circulatory disturbances. "The pleural reflex may act on the cardioinhibitory fibres of the heart through the vagus nerve-endings or on the vasomotor centres through the sympathetic nerves." The resulting collapse is often called "pleural shock."

Other cases of collapse are definitely due to pulmonary lesions produced by thoracentesis, such as air embolism, when, after death, gas bubbles may be found in the blood vessels at the base of the brain; pulmonary oedema, the exact mechanism of the production of which has not yet been ascertained, although there are possibly a number of causes; pulmonary thrombosis following puncture of the lung with embolism to the heart or brain. Pulmonary hæmorrhage with or without haemoptysis may also cause death: pneumothorax rarely causes serious symptoms.

The writer reports a case in which death followed twelve hours after exploratory thoracentisis. Nothing was found in the clinical examination or at the autopsy to suggest air embolism

At the post mortem a puncture wound of the middle lobe of the right lung was found surrounded by hæmorrhage, congestion and extensive pulmonary oedema. The fatal outcome was apparently due to congestion of the lung parenchyma plus oedema of the lung with secondary circulatory reflexes. ARCHIBALD MALLOCH

Quinine Idiosyncrasy and Cinchonine. Fletcher W., and Travers, E. A. O. *Brit. Med. Jour.*, April 14th, 1923.

In the experience of the authors, one of whom has been in the Malay States for twenty years, idiosyncrasy to quinine is much less common than the textbooks say. They have seen only one case and it does not seem certain that the exfoliative dermatitis was due to quinine or to some other cause. A lady, aged thirty, was taken ill with benign tertian malaria on June 10th, 1922. She was treated with 30 grains of the acid hydrochloride of quinine intramuscularly every day for three days. Subsequently she received till July 4th, 45 grains of quinine daily in a mixture containing 15 grains of quinine sulphate and 3 minims of the hydrochloric solution of arsenic in each dose. Three weeks after quinine was first taken, a blotchy rash appeared on the face, neck, arms and hands and continued for eight weeks. Then the skin of the whole body was swollen, red, dry and peeling: the face was bloated and her eyelids so swollen that she could scarcely open them. There were bullæ about the mouth and the tongue and the buccal mucosa and throat were inflamed and painful: the general appearance suggested exfoliative dermatitis due to arsenical poisoning. The temperature was 102°F., and subtertian parasites were found in the blood.

As it did not appear that the patient could take quinine, 16 grains of cinchonine base were given daily in 4 grain doses in gelatin capsules. The vomiting ceased, the temperature was lowered, and the parasites disappeared from the blood. The rash disappeared, but the skin was left pigmented—not over the abdomen as in arsenical poisoning. Under a lessened dosage, cinchonine base was continued until November, and the patient left soon afterwards for England in good health.

McGilchrist has shown that the several alkaloids of cinchona vary in their toxic properties, and Acton claims that the members of the laevo-rotatory group, which includes quinine, have different therapeutic properties from those in the dexto-rotatory group, which comprises cinchonine and quinidine. The authors think it unlikely that in every case of quinine idiosyncrasy the sensitiveness is limited to one or other of the cinchona alkaloids, but in this instance as soon as cinchonine was substituted for quinine the alarming signs and symptoms disappeared.

ARCHIBALD MALLOCH

Arterial Hypertension. Hartweg, E. *Zentralbl. f. inn. Med.*, December 23rd, 1922.

The writer mentions the diseases which may cause high blood pressure, and discusses the cases of high blood pressure in elderly people which are not associated with disease of the kidneys or heart' This last form is described as essential hypertonus; it is regarded by some authors as a sign of commencing kidney affection, since in course of time in some of these cases albuminuria is detected. But the author shares the view of those who consider the subsequent kidney condition to be the result of the high blood pressure. The condition is caused by primary vascular constriction, and as a result of the high blood pressure both arterio-sclerosis and granular kidney may develop. Chronic abuse of tobacco is very often the exciting cause of the high blood pressure. Assuming these views to be correct, the author points out the importance of the treatment of high arterial tension. In addition to physical, dietetic, and psychical treatment, the employment of vaso-dilators is indicated, and of these the author thinks yohimbin deserves special mention. It dilates the peripheral arterial system and neutralizes vascular spasm of sympathetic origin. Through the use of this drug the development of arterio-sclerosis and granular kidney is thought to be prevented or at least postponed. The author states that his experience confirms this view.

(*Brit. Med. Jour.*)

Age at Death of Parents of Tuberculosis and Cancer Patients. Pearl, R. *Am. Jour. of Hygiene*, December, 1922.

A study of the question of the ages at death of the parents of the tuberculous and the cancerous, on the basis of critically collected new material, shows that, for completed lives (parents dead), the mean age at death of the parents of a group of tuberculous persons is significantly, but not greatly (from two to four years), lower

than the mean age at death of the parents of a group of non-tuberculous persons having the same age distribution as the tuberculous group. The same thing is true of the fathers of a group of cancerous persons. The experience for mothers of the cancerous is too meagre to give definite results. In so far as duration of life may be taken statistically as an indicator of soundness of biologic constitution, it follows that in some degree, though not considerably, both the tuberculous and the cancerous are of weaker stock constitutionally than those not having these diseases. Incidentally, the results of this investigation, as they are interpreted by Pearl, furnish new evidence of a different sort than any heretofore offered, on the question of the inheritance or duration of life.—*J.A.M.A.*, Jan., 1923.

"Glandular Fever." Longcope, W. T. *Amer. Journ. Med. Sci.*, December, 1922.

The author points out that under the terms "glandular fever," "infectious mononucleosis," and "acute benign lymphoblastosis" cases have been described which present somewhat similar symptoms. He records ten cases which he describes by the term "infectious mononucleosis." The clinical features resemble those of "glandular fever" (described long ago by Pfeiffer, Dawson Williams, and others), but at present the exact relation, he says, is not settled. The onset is gradual, with headache and irregular fever, and often with pharyngitis, tonsillitis, or tracheitis. The cervical glands become enlarged, firm, and tender; frequently the axillary and inguinal glands are also affected; sometimes the spleen becomes enlarged and tender. The leucocytes in the blood increase in number from the seventh to the tenth or eighteenth day. The change is a mononuclear leucocytosis—an absolute and relative increase in the mononuclear non-granular leucocytes, with a decrease of the total number of granular leucocytes. Three forms of mononuclear leucocytes are found in all these cases: (1) small mononuclear leucocytes, (2) large mononuclear leucocytes (both similar to those seen in normal blood), and (3) mononuclear leucocytes of a type not usually seen in normal blood. The third type predominates. These cells are somewhat larger than the small lymphocytes, and contain oval, kidney-shaped, or slightly lobulated nuclei, usually without definite nucleoli, and often eccentrically situated in the cell. Sometimes the nucelus almost filled the cell; at other times it was surrounded by a considerable amount of basophilic non-granular protoplasm. The absence of the oxidase reaction differentiated these cells from myeloblasts. There is no anaemia. The fever rarely exceeds 102° or 103°; it continues irregularly until the tenth or twentieth day, and then gradually subsides, and the symptoms and blood changes then disappear. The uniform character of this febrile disease and the association of enlargement of lymph glands with a striking increase of mononuclear leucocytes of an abnormal type in the blood serve to differentiate the condition from other acute infectious diseases. The cause is unknown. The disease is of short duration, and recovery is the rule. It resembles most closely acute leukaemia, but may be differentiated by many characteristics—anaemia and purpuric spots are absent, and the abnormal mononuclear cells in the blood are different in their histological and biological characteristics from those in leukaemia. (*Brit. Med. Jour.*)

The Heart in Influenza. Menti, S. *Zentralbl. f. inn. Med.*, January 6th, 1923.

The author from his observations on 106 cases of influenza, came to the conclusion that this disease has a definitely injurious action upon the heart. Circulatory disturbances developed which had hitherto been latent, or in the case of valvular defect had been well compensated, and caused no symptoms. Diseases of the heart and vessels which had already caused some symptoms before the attack of influenza underwent a considerable aggravation. In a second group showing cardiac disturbance without any anatomical lesion a general asthenia was noted. In both groups there was a disturbance of pulse rhythm which Menti attributes to a change in the conductivity of the heart muscle similar to that which occurs in convalescence from diphtheria. The symptoms in both groups were very slow in disappearing, and ordinary treatment, especially digitalis, failed, so that Menti came to the conclusion that cases which did not react promptly to digitalis were due to influenza. If digitalis had to be given at all it was administered only in combination with quinine, caffeine, theobromine, belladonna, etc. (*Brit. Med. Jour.*)

PAEDIATRICS

Gastric Hyperacidity in Children. Kerley. C. G., and Lorenze, E. J., M.D. *Jour. Amer, Med. Assoc.*, Nov. 25th, 1922.

Hyperacidity is quite a common condition in childhood. The usual symptoms are abdominal pain, nausea, anorexia, and occasional vomiting. The pain is usually epigastric and most marked before meals, especially before breakfast. It may be colicky. Vomiting may occur at any time, but is most common after breakfast. Nausea occurs usually before meals and is often relieved by taking food. The appetite is variable, but usually poor. Often a few mouthfuls will satisfy and the child will have to urged to take more. Constipation results from the small food intake which may also lead to malnutrition and anaemia. Dietetic errors are responsible for the hyperacidity. Unsuitable food at frequent or irregular intervals and the over-indulgence in cake, candy and cream sodas are the usual errors, while orange juice before breakfast is a common cause. The normal evacuation time of a child's stomach is about four hours. Hypomotility and pyloro-spasm delay the emptying time and give rise to retention which in turn causes hyperacidity. Good appetite and normal digestion depend on rest period of at least half an hour before food again enters the stomach.

Sixty-seven cases of chronic stomach disorders were studied by means of a test meal and gastric analyses. Taking the normal acidity in children as ranging from 30 to 40 it was found that:

58	showed	total	acidity	over	50
44	"	"	"	"	60
36	"	"	"	"	70
24	"	"	"	"	80
3	"	"	"	"	90
2	"	"	"	"	100

Treatment.—Three full meals are allowed daily; at 7.30 a.m., 12.30 p.m., and 6 p.m., with a cracker at 3.30. Raw fruits, fruit juices, or condiments are forbidden. Food must be neither very hot nor very cold. No ice-cream or iced drinks. Sugar is to be used scantily. Half an hour before each meal the following powder is given in one-half glass of warm water:

Soda bicarbonate grs. ii
Bismuth subcarb. grs. ii
Magnesium carb' gr. i

If constipation is a factor, from 15 to 30 drops of aromatic cascara are given after each meal and *not* in one dose at bed-time. Results have been most satisfactory if the diet and medication are continued for months. There is always a tendency to relapse with any indiscretion in diet. L. M. LINDSAY

The Etiology of Acute Intestinal Intoxication in Infants. Boyd, Gladys L., M.B. *Arch. Int. Med.*, Feb. 15th, 1923.

Extracts of intestinal mucous membrance from cases of acute intestinal intoxication in children contain a toxic substance which, when injected into the peritoneal cavity of animals produce a definite symptom complex, consisting of depression and narcosis, anorexia, circulatory failure, frequent stools, and in some cases convulsions and death. Younger animals (rabbits, kittens, etc.,) were found to be more susceptible to this toxic substance than older ones, especially if previously dehydrated.

The toxin is not destroyed by boiling, and passes through a bacteria-tight filter, but boiled aqueous extracts of fresh stools proved non-toxic when injected into animals. The systemic blood from these patients was only slightly toxic when injected into animals. The portal blood however, was very toxic. Necropsies presented nothing distinctive, slight fatty changes in the liver and kidneys, and some alveolar hæmorrhage being the only abnormal findings. L. M. LINDSAY

The Relation of Chorea to Rheumatism. Nordgren, R. *Acta Paediatrica*, Dec. 16th, 1922.

The writer has made a statistical study of the incidence of rheumatic lesions and of chorea in children's hospitals in Stockholm between October 1st, 1908, and the end of 1921. As a table shows, the incidence of the two was remarkably uniform, and the author quotes Roger as saying that chorea, rheumatism, and endocarditis are three names for one and the same condition. Among the 343 cases of chorea there were 26 with a history of rheumatic fever, with or without valvular lesions, 161 with valvular lesions which could be traced to no other disease, and six with a history of endocarditis during residence in hospital. Thus 193, or more than half, showed definite signs of rheumatism. Other possible causes of the chorea were seldom found; there were only six cases with a history

of scarlatina, and six others with a history of psychic shock. It was significant that during the epidemic of influenza in 1918 and 1919 there were very few cases treated in hospital. With regard to the sex distribution of chorea and other rheumatic affections, it was found that there were only 125 boys to 218 girls suffering from chorea. In the case of other rheumatic affections, however, the sex incidence was almost equal; there were 177 boys to 190 girls. The age for which chorea showed the greatest preference was between eight and ten, and there were as many as forty-three boys and seventy-seven girls within this age limit. (*Brit. Med. Jour.*)

DERMATOLOGY

The Treatment of Pruritis Ani With Bacterial Injections. Knowles, F. C., and Carson, E. F. *Arch. of Derm. and Syph.*, April, 1923.

This is a short paper, with some discussion. The writers admit that they themselves can only report on a small series, eighteen in number: and also that only seven of these were treated long enough to allow of conclusions. But they refer to similar work of Drs. Winfield and Murray, who reported results in over 200 cases. Cultures taken locally in severe pruritis ani, give almost constantly *streptococcus fecalis*, along with the colon bacillus, and the idea arose that vaccines from these might be useful.

Results have been very favourable. Apparently stock vaccines of either organism were as effectual as autogenous. Sometimes it was found very useful to give both organisms, in other cases either one or the other gave results singly. In the work of these authors *streptococcus fecalis* vaccine gave the best results.

Large doses were used, up to as much as a billion at a time; small doses seemed to have no effect. The injections were given weekly, the period of treatment varying from twelve to twenty weeks. In the discussion it was pointed out that associated conditions must be treated and some thought that was very often sufficient. Also it was suggested that the injection used need not be specific, any protein being able to give a reaction which would relieve the itching. But the feeling was present that in this class of case the use of vaccines was of very considerable value.

H. E. MacDermot

SURGERY

Chronic Non-Inflammatory Lesions of the Knee Joint. Henderson, M. S. *Arch. of Surg.*, Jan., 1923, p. 118.

After discussing the anatomy and physiology of the knee joint, the following lesions are discussed: (1) *Sprains.* Here the internal lateral ligament is generally involved. Damaged semilunar cartilage is ruled out by absence of locking. Rest for a few days, baking and massage are usually effective. If pain and tenderness persist, the inner side of sole and heel should be raised to remove the strain from the internal lateral ligament.

(2) *Rupture of the crucial ligaments.* This condition would seem to be infrequent. In the few cases seen by the writer, excellent function has been obtained by the use of a plaster-of-Paris cast in a slightly flexed position.

(3) *Intra-articular fractures of the knee joint.* Severe trauma may produce fracture of the tibial tuberosities or of the femoral condyles. Very little can be done for such patients. The condition of disability is usually not severe enough to warrant an ankylosing operation. When seen early such cases should be treated by early motion which is less painful when carried out under extension. It is doubtful whether an early open operation would secure better position of the fragments.

(4) *Recurring dislocations of the patella.* These are always outward. Reefing the inner capsule after lengthening the outer capsule acts satisfactorily. The condition is most commonly seen in women.

(5) *Old ununited fractures of the patella.* These are difficult to treat. The disability may be great or but slight. The fragments must be brought together without tension, even though the upper fragment is dissected entirely free and used as a graft to the lower. The gap left is obliterated by sutures, the fragments are held together by beef bone screws, kangaroo tendon or wire.

(6) *Intrinsic mechanical derangements of the knee joint.* Of these, the internal semilunar cartilage is the principal source, the loop or bucket-handle type of tear being most frequently seen. The external semilunar, thanks to its loose attachment at the periphery, usually escapes injury. Reduction by manipulation of a displaced cartilage is described, also the opera-

tion for its removal. Another source of mechanical derangement is the presence of loose osteocartilaginous bodies. These are produced by three conditions: 1. osteochondritis dissecans; 2. hypertrophic arthritis; and 3. osteochondromatosis. Osteochondritis dissecans rarely sets free more than one or two bony masses, usually from the internal condyle near the insertion of the posterior crucial ligament. The etiology of this condition is not yet clear. In hypertrophic arthritis, loose bodies are produced by the breaking off and dropping into the joint of marginal outgrowths. These wander about and increase in size; four or five may be present, usually in elderly persons. In osteochondromatosis the synovial membrane, from some developmental defect, takes on the property of forming osteocartilaginous bodies, which may reach a large number. We do not know why this occurs. The presence of loose bodies of any origin is an indication for their removal. Often this can be done under local anaesthesia. When the bodies are multiple the split-patella route is the method of choice. J. A. NUTTER

Some Problems of Gastric and Duodenal Ulcer. Moynihan, Sir Berkeley. *Brit. Med. Jour.*, Feb., 1923.

The author reviewed a series of 718 cases of chronic ulcer of duodenum and stomach taken from the records of the Leeds General Infirmary, The diagnosis of duodenal ulcer can be made with a considerable degree of confidence, but not so a gastric ulcer. Many conditions having their origin elsewhere, are expressed in terms of gastric discomfort. Probably the greatest help to a definite diagnosis is found in the radiological examination. Sir Berkeley Moynihan has discarded the Ewald test meal and substituted the fractional method of Rehfuss. Using this procedure he found only twenty per cent. of the cases of gastric ulcer showing a hyperchlorhydria whereas the percentage of duodenal cases was 72.7. Judged by results he considers medical treatment to have failed in its essential aim, namely, the permanent healing of the ulcer.

In the series he reviews, the average duration of symptoms was seven years to nine and a half years, during which time the patients suffered from several "attacks." Medical treatment gives us no information as to the associated and possibly—causal infections present within the abdomen. In this series the appendix was removed 307 times and the gall bladder 23 times. It seems quite impossible to prevent recurrence of symptoms in a large number of cases. In the recurrent attacks any of the catastrophes such as hæmorrhage or perforation may occur with a fatal result. It is usually in the chronic type of ulcer that these complications do arise. Carcinomatous degeneration at the edge of a simple gastric ulcer must not be neglected. This condition was found in 18.5% of the supposed chronic ulcers. Medical treatment, scrupulously carried out, will, however, rapidly cause an alteration in the gravity of the symptoms within a few days or weeks. Symptoms disappear as soon as an ulcer shows any evidence of healing. That healing does occur occasionally is shown by the discovery of sound, firm scars in the post mortem room. To obtain any permanent result a patient would necessarily have to be kept in bed for many weeks on a very restricted diet.

As a sure and safe procedure he recommends partial gastrectomy. In his hands, in the last ten years, the mortality was only 1.6%. There are a few cases in which it cannot be performed. In these cases he follows Balfour's method of cauterizing the ulcer, followed by a gastro-enterostomy. GEO. A. FLEET

Fracture of the Head of the Femur, with Dislocation on the Dorsum of the Ilium. Hinsdale, Guy. *Jour. A.M.A.*, Feb. 17, 1923, p. 469.

This case is reported on account of the rarity of fracture of the femoral head. A woman of 55, weight 160 lbs., fell, striking her hip in "an extreme position of the limb." After the accident, the deformity typical of dorsal dislocation of the hip was present, with about three inches of shortening. Efforts to reduce the hip by manipulation proved ineffectual. X-rays showed one-third of the head of the femur, including, it was found later, the insertion of the ligamentum teres, lying on the lower acetabular margin. The dislocation was reduced by open incision, the fragment first being removed. Recovery was prompt and satisfactory. The author discusses the possible mechanics of the fracture-dislocation, considering it likely that the leg was at first forced into an abnormal position and then, by a fall, the head was broken against the acetabular brim, permitting full dislocation.

J. A. NUTTER

XUM

ANAESTHESIA

Nitrous Oxide Anaesthesia in Obstetrics. Le Protoxide d'Azote Anesthesique Obstetrical). Brault, P., and Barbidor, L. *Le Progrès Médical*, Sept. 2, 1922.

Much publicity has been given, in France, to two recent cases of acute pulmonary oedema, following the administration of nitrous oxide gas. In both these cases the gas was mixed with 25% of carbon dioxide, and with ether, so that there is no reason for incriminating the gas.

The only cause of a fatal accident in gas anaesthesia is asphyxia. Nitrous oxide causes no changes in the blood, either chemically or histologically. It is eliminated in five minutes after the longest administration. Ether takes four and chloroform seven hours to disappear completely.

Nitrous oxide does not decrease the alkalinity of the blood, it increases the coagulability, it moderately increases blood pressure and vomiting is rarely caused. In connection with vomiting after ether or chloroform, this may be due to the property which these two anaesthetics have of lessening the secretion of the adrenals. With this fact in mind, Delbet gives his operation cases hypodermic injections of adrenalin. After anaesthesia with nitrous oxide, when there has been no limitation of oxygen the output of urea is increased.

Nitrous oxide may slightly aggravate the condition of kidneys already diseased, but it never causes damage to them when healthy. Both chloroform and ether produce hepatic insufficiency. Even after ether anaesthesia, bile salts and pigments are found in the urine in many cases; according to Nogue, in eighty-five per cent. of cases. Nitrous oxide causes increased frequency and duration of the labour pains. The second stage is lessened by seventy-five per cent. to eighty-five per cent. under continuous administration; and the whole labour by twenty-five per cent. The patient's mental condition is favourably affected by the relief of pain. The condition after delivery is more satisfactory than when ether or chloroform have been used. There is no reason to believe that there is any more hæmorrhage after labour, or that any harm is done to the child. Nitrous oxide given without sufficient oxygen does not seem to have any effect in causing premature respirations on the part of the child. The only contraindication is high blood pressure. When, however, this is associated with eclampsia, if an anaesthetic is necessary, less harm is done by nitrous oxide than by either ether or chloroform. Some patients, usually alcoholics or very neurotic women, inhale nitrous oxide without any tendency to go to sleep, and must be given ether or chloroform. To obtain relaxation of the abdominal muscles it is important to commence the administration with plenty of oxygen and to keep the patient a good colour.

The only danger with pure gas is asphyxia when the administration is in inexperienced hands. Certain pulmonary after-effects which have followed its use and been attributed to it have been due to the presence of impurities.

Conclusions

1.—Chemically pure nitrous oxide gas given by a competent anaesthetist is harmless to mother and child.

2.—Far from slowing uterine contractions, it appears to lessen by 25% the duration of labour.

3.—Voluntary efforts in the second stage are stronger, because pain is suppressed and the mind calmed.

4.—Nearly all obstetrical operations can be done under gas. Only in exceptional cases is it necessary to add another anaesthetic.

W. B. Howell

Indications for Spinal Analgesia, (Indications de la Rachianesthesia). Gosset, Prof. A., and Monod, Robert. *Paris Médical*, March 11, 1922.

At the surgical clinic of the Salpêtrière during 1921, 442 operations were performed under spinal anaesthesia, 300 under ether, 3 under chloroform, 9 under ethyl chloride, and 4 under nitrous oxide gas; 75 were done under local or regional and one under splanchic anaesthesia. At first, the writers used a solution of stoyaine (Billon) but later abandoned it for syncaine, which is much less toxic. The spinal method long reserved for operations below the level of the umbilicus, can profitably be used for operations on the upper abdomen. They used it in most of their operations on the liver and stomach. They consider it the method of choice in gynaecological operations, in hæmorrhoids, nephrectomy, prostatectomy, for all prolonged operations below the level of the umbilicus and for those entailing much shock such as cancer of

the rectum and extensive resections of the bowel. They found it worked well in old patients whose kidneys and livers function badly and who are susceptible to congestion of the lung. They have not used it much in children. In cases of severe trauma, where there is a condition of shock, they think the advantages of spinal anaesthesia open to doubt, as it causes a further lowering of blood pressure. Among their cases were several of acute general peritonitis in which the method failed. They ascribe these failures to the severity of the peripheral nerve excitation which rendered the cord refractory to the action of the anaesthetic. For operations above the level of the umbilicus they used a modified Filliatre's method. They never tried to get anaesthesia higher than the thorax for fear of affecting the bulbar centres.

The risk of post-anaesthesia complications is reduced with spinal anesthesia, notably those associated with defects of the heart, liver and kidneys. Pulmonary complications, so serious in stomach cases, are less often seen. There is less chance of infection from improperly cleaned anaesthetic masks, and there is no hypersecretion from the mouth to be inhaled. Shock is prevented. The complete muscular relaxation prevents straining. The method is not dangerous. Among 2,000 cases the writers saw, no deaths were imputed to it.

After-effects, such as vomiting and retention of urine, they found were never persistent, though headache was occasionally annoying and persistent. Syphilitics seemed specially prone to headache.

Failures and post-anaesthetic complications became less frequent as they became more familiar with the method.

Precision and dexterity are required in making the injection and fresh solutions must be used. In the course of the summer of 1921, which was particularly hot, there were several cases with toxic symptoms (epileptic cases, vertigo, delirium and anuria) from defects in the solutions. Decomposition may result in incomplete anaesthesia. Serious symptoms due to the effect on the bulbar centres, when high anaesthesia had been used, were rare and never followed by death. There was one case of failure of respiration. Artificial respiration and the injection of caffeine tided the patient over the crisis.

Nervous sequelae, such as pain in the back, paralysis of the 6th nerve (there were three of the latter in 1,000 cases) never persisted. Paraplegia they never saw. Injury to the spinal cord is impossible with low spinal puncture. Any local toxic effect of the anaesthetic must always be transitory. The substance injected is excreted in the urine, the elimination being complete in six hours. Many distant nervous effects ascribed to spinal anaesthesia have been shown to be due to syphilis of the nervous system. The objections to spinal anaesthsia are that it occasionally fails, that it requires of the patient calmness and confidence, difficult to obtain in those with nervous temperament and that it sometimes causes headache.

In the case of failure in operations above the level of the umbilicus they advise against continuing the operation, having seen two cases of death with ether under those conditions. They were cases of stenosis of the pylorus due to neoplasms where the stomach was greatly distended. Probably the reflexes of the upper respiratory tract were dulled, for both died from asphyxia due to inundation of the lungs during vomiting. They do not agree with those who advise against repeated spinal injections. In one case they gave six spinal injections within two months. They consider the spinal method of inducing anaesthesia a very valuable one and believe that it should be more generally used than it is.

W. B. HOWELL

Synergistic Analgesia in Rectal Operations.
Saphir, J. T. *New York Med. Journ. and Med. Record*, March 21, 1923, p. 351.

The writer advocates the use of synergistic analgesia where local or general anaesthesia is contraindicated. He gives three hypodermic injections, each containing morphia gr. $\frac{1}{6}$ dissolved in 10 c.c. of a 25% solution of chemically pure and sterilized magnesium sulphate, at 25 minute intervals, the last half an hour before operation. His patients are free from pain during operation, and from post-operative pain for from 12 to 20 hours. In abdominal cases the use in this way of magnesium sulphate, leads to better relaxation. There is less nausea and pain afterwards. The use of the catheter after operation is less often necessary. Details of six cases are given. In one, local anaesthesia, and in another, nitrous oxide and oxygen had to be used in addition.

W. B. HOWELL.

XUM

Nitrous Oxide and Oxygen—Its Value as a General Anaesthetic in Genito-Urinary Surgery. Buettner, J. J. *New York State Journal of Medicine*, March, 1923, p. 112.

The urologist is confronted by extra hazardous risks. Nitrous oxide and oxygen, properly given, exert a less deleterious effect on the body than any other general anaesthetic. They do not irritate the lungs or kidneys. They cause no chemical or morphological changes in the blood. They can be given in cases of high arterial tension with safety. To obtain relaxation a small amount of ether (1-4 drachms) must be added in some cases. The surgeon should be willing to co-operate to the fullest extent with the anaesthetist. R. Fitz, of Rochester, Minn., is quoted as stating that nitrous oxide seems in diabetic cases to reduce acetonaemia. Buettner emphasizes the importance of choosing the proper anaesthetic for each case. Some surgeons state that they have better post-operative results with gas and oxygen than with local anaesthesia. The necessity for a proper preparation of the patient is emphasized. W. B. HOWELL

The Physiologic Effects of Ethylene.—The toxicity of ethylene for flowering plants suggested to A. B. Luckhardt and J. B. Carter, Chicago, the possibility that some of the toxic properties of ordinary illuminating gas for animals might be due to its ethylene rather than to its carbon monoxid content. Experiments were made on animals and on man. From the animal experiments it appears that all of the animals used (mice, rats, rabbits, guinea-pigs and kittens) could be anaesthetized with a ninety per cent. ethylene mixture in one-half the time necessary to anaesthetize the same animals with the same percentage of nitrous oxid. Twelve subjects were anaesthetized, more or less deeply. One of the authors was anaesthetized six times in three days in three weeks; the other (J. B. C.), seven times on the three days in three weeks. In neither instance did sugar or albumin appear in the urine as a result of the experiences, nor did they experience any other evil after-effects except for a slight nausea and loss of appetite, both of very temporary nature. It is evident, then, that deep surgical anaesthesia can be rapidly reduced by ethylene without any sense of asphyxia, but, on the contrary, with a sense of well-being and comfort. Analgesia comes on easily apparently long before complete surgical anaesthesia is established. At a time when there is complete muscular flaccidity, the pulse rate is slightly decreased, if changed at all; respirations are slow but regular, and the countenance normal in colour for the individual, or slightly paler. No cyanosis was ever observed. No subject ever showed any sign even suggestive of asphyxia. The induction of anesthesia was in no way unpleasant except possibly for the first few inhalations of the *concentrated* gas, which induced reflex swallowing. A period of excitement characterized by laughing or forced movement preceded the anaesthesia in some. In others, such signs were absent during induction, but were in evidence as the person recovered from the anaesthesia. Recovery from the anaesthesia was always rapid on withdrawal of the gas mixture. In all, slight weakness and a sense of fatigue were experienced if the person arose from the couch almost immediately on waking up. Vomiting occurred in one early during recovery. In some, slight epigastric distress was experienced temporarily. In others, a slight nausea persisted for several hours after the administration of the gas. In none was nausea so pronounced or so prolonged as to interfere with the ingestion of the next meal. The possible advantages of ethylene over nitrous oxid, if used for human anaesthesia, are: 1. Anaesthesia may human anaesthesia are: 1. Anaesthesia may be maintained: (a) in the absence of all signs of asphyxia; (b) in the absence of effects on blood pressure; (c) in the absence of dyspnea; (d) with complete muscular relaxation. 2. It may be used in obstetrics, a state of complete analgesia being possible at a concentration of eighty per cent. ethylene. 3. There is rapid recovery after long continued administration, without evidence of after-effects. These advantages would make possible its use in many persons and conditions in which nitrous oxid is specifically contraindicated, as in children, in diabetic patients, in old age, in advanced arteriosclerosis, in high cerebral pressure, in operations on the brain, in major operations, and in obstetrics.—*Jour. Am. Med. Assoc.*, March 17, 1923.

News Items

GENERAL NEWS

THE Second Congress of French-speaking Dermatologists and Syphilographers will be held at Strasbourg on the 25th, 26th and 27th of July, 1923. as part of the Pasteur Centenary Exhibition, which is being held at Strasbourg from June to October, 1923. This Congress will be under the patronage of the French Society of Dermatology and Syphilology and of the committee of organization of the Association of French-speaking Dermatologists and Syphilographers. Those who are eligible for membership are: (a) The members of National Societies of Dermatology and Syphilology; (b) Physicians who are interested in the question of skin and syphilis, and who are acceptable to the committee of organization. The meetings will be held at the Institute of Hygiene and Bacteriology and at the skin clinic from 9 a.m. to 2 p.m. Cases will be presented, papers will be read and discussions of reports on the following questions will be held: 1. Sensitization and desensitization in skin diseases; reported by Dr. Ravaut, of Paris, and Professor Spillman, of Nancy. 2. Naevo-carcinomata; reported by Professor Masson, of Strasbourg, and Professor Bruno Bloch, of Zurich. 3. Treatment of Syphilis in the pre-generalization period; reported by Dr. Quevrat, of Paris, and Professor Malvoz, of Liège. 4. The value of the different routes in the treatment of Syphilis; reported by Dr. Milian, of Paris, and Dr. Bodin, of Rennes. The president of the committee of organization is Professor Pautrier, 2, St. Nicolas quai, Strasbourg. The Congress of Dermatology and Syphilology will be preceded by the Cancer Congress, which will take place Monday and Tuesday, the 23rd and 24th of July, and will be followed by a Conference on Leprosy, on Saturday, the 28th, Monday, the 30th and Tuesday, the 31st. Further information concerning this congress may be had from Dr. Gustave Archambault, 616, Rue St-Denis, Montreal, Que.

THE Medical Alumnae, Toronto, at their annual meeting, April 18th, passed a resolution approving of the plans of Dr. Margaret S. Wallace, late vice-principal of the Women's Christian Medical College, Ludhiana, Punjab, India, to return to India to organize the Indian women medical graduates into an association and to build a home in the Lower Hills that will become the centre of their various activities. The Medical Alumnae appointed a committee to assist in raising the necessary funds. It is hoped that other medical associations will assist in this work. Dr. D. F. Gibb Wishart, 47 Grosvenor St., Toronto, will act as Honourary Treasurer.

Dr. L. Duncan Bulkley proposes to form an American Society for the Scientific Study of the Medical Aspects and the Treatment of Cancer. As there will be a large gathering of the profession at the Meeting of the American Medical Association in San Francisco, he regards that occasion as a suitable one for the consideration of the matter. The plans and the details for such an Association will be worked out in the Meeting which will be called by Dr. Bulkley and of which due notice will be given.

Dr. M. T. MacEachern has tendered his resignation as general superintendent of the Vancouver General Hospital to take effect at once. A special meeting of the board of directors was held on Monday to deal with the matter. He has received a flattering offer from across the border. Last April, the board granted Dr. MacEachern a year's leave of absence to make a Dominion-wide survey of nursing and hospital conditions for the Victorian Order. During the intervening period, he was elected president of the American Hospital Association. His genius as an organizer has attracted widespread attention during the past few years, and his work for the Victorian Order has called forth the most enthusiastic comment in the East. His decision not to return to the Hospital will be much regretted by his many friends in Vancouver.

NEW BRUNSWICK

Dr. J. F. London, McGill '08, who has been in practice in St. John during the past four years, died recently in the General Public Hospital. Sincere sympathy is felt for his bereaved wife and children.

The Annual Report of the St. John County Hospital is just at hand, and proves a revelation to those who have not been familiar with the work done there. Under Dr. H. A. Farris the institution has become one of the most efficient and best equipped in Canada. The addition of an operating room where surgery of the thorax may be done, is a much needed improvement and was the one thing needed to bring the hospital thoroughly up-to-date.

It was with great regret that the profession learned that Dr. Stewart Skinner, for many years Registrar for New Brunswick, had found it necessary, on account of his health, to resign. Fortunately, his successor, Dr. J. S. Bentley, has the goodwill of all the physicians in the province, and will prove a worthy official. His position is not a sinecure, but his popularity with his professional brethren will make the work less irksome than it otherwise would be.

Before this appears in print, the annual meeting of the New Brunswick Medical Society will have been held. It is hoped that at it some steps will be taken to establish sectional medical societies that will be branches of the provincial society and through it affiliated with the Canadian Medical Association. Conditions in New Brunswick are somewhat different from those in other places, but all difficulties must be overcome and the profession organized if we are to become such a power in health matters as we should be. People look to us for information and instruction in these things, but we can only have the proper influence if we are organized. The public welfare, as well as our own interests, demands it and any effort to bring about such a necessary organization will be worthy of the support of all those who have at heart the health and best interests of the public.

The second meeting of the Maritime branch of the American College of Surgeons was held in St. John, May 11-12. The clinics, scientific sessions and public meetings were well attended and proved of great interest. Drs. Craig and MacEachern—associated directors of the college—were present and took advantage of every opportunity to give publicity to the college and its work. Insofar as this affected the betterment of our hospitals

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it was of interest to the general public and the profession at large. In St. John, we have noted the improvements that have come about in both our hospitals as a result of standardization which was sponsored by the college. In this work it should have the undivided support of the public and the medical fraternity. The local fellows of the college arranged a very interesting programme and were not amiss in looking after the entertainment of their visitors. Those attending the clinics were the guests of the Commissioners of the General Public Hospital at lunch on Friday, and on Saturday the Military Hospital proved a most efficient host. Amongst the out-of-town fellows present were, Drs. Pinault, of Campbellton; Vanwart, of Fredericton and Rankine, of Woodstock.

Enquiries from different parts of the province regarding the possibility of getting a supply of Insulin to use in diabetic cases, necessitates the informing of New Brunswick practitioners, through the *Journal*, of the present status of Insulin treatment in New Brunswick.

The general practitioner to whom literature is not yet available, should know that Insulin is not a substitute for present methods of treating diabetes. It should never be used if diet, etc., will allow the patient to get along comfortably. It is in cases that are going bad in spite of treatment, and particularly in diabetic acidosis and coma, that Insulin is indicated, and in these it is almost a specific when administered under favourable conditions.

Some time ago the committee that controls its use and distribution, decided to allot some for experimental use in the General Public Hospital, St. John. This supply was placed in charge of Dr. W. E. Rowley, and the results obtained have been extremely satisfactory and compare favourably with those obtained elsewhere. Worthy of note was a case of diabetic gangrene in which after treatment, an amputation was performed and healing took place by first intention.

The dosage in each case must be determined experimentally, and every change in dosage and in diet must be guided and controlled by a simultaneous estimation of blood sugar. Without this laboratory work the administration of Insulin is not without danger as Insulin will reduce sugar even if the sugar is not present in excess or in the diet. After discharge from hospital, the patient, even if he can get along without further treatment, and particularly if Insulin is still being used, should have frequent blood sugar estimations made, as variations in diet, as well as emotional or other outbreaks, may disturb the established equilibrium and produce a crisis. The administration of the drug must be checked step by step by accurate estimation of blood sugar, and must be given in conjunction with a carefully weighed and definite diet. For these reasons it is not, at present, deemed advisable to issue the remedy for use elsewhere than where blood sugar estimations can be made. As the laboratory attached to the General Public Hospital is the only one east of Montreal that is equipped to do the delicate and accurate tests required to guide the administration and dosage of this new and potent remedy, there seems no possibility, at present, of any being available for use outside St. John.

The Insulin committee of the University of Toronto have instituted a two days' course at the Toronto General Hospital to instruct physicians in, (a) the method of administration, (b) the choosing of suitable cases and, (c) to become familiar with the untoward effects of overdosage and the treatment of these effects. Later on, physicians who have taken this course will be offered, at cost, a limited supply of Insulin for use in cases under their charge. Any physicians desirous of taking this course are requested to write to the Secretary of the New Brunswick Medical Society. The cost of treatment varies from $2 to $3 for the Insulin *plus* hospital, laboratory and physicians' fees. E. J. R.

QUEBEC

MASONIC INSTITUTE FOR CRIPPLED CHILDREN TO BE READY IN A YEAR

Through the generosity of local Shriners, a hospital for crippled children whose parents cannot pay for treatments will be in operation within one year in Montreal. It will contain 50 beds and will be situated next to the Children's Memorial Hospital on Cedar Avenue. The building is estimated to cost $250,000.

Dr. J. A. Mireault gave an interesting lecture on "Industrial Medicine" at the Chambre de Commerce in Montreal recently.

Dr. L. Reford returned recently from a trip to the Orient.

Dr. A. Lorne C. Gilday has been made superintendent of the Western General Hospital.

Announcement is made by the Laurentide Health service that Dr. Harry R. Hooper, of Montreal, is to be examining physician, succeeding Dr. Turney. Dr. Hooper will not take up work at Grand'Mere until the summer.

The Hon. Dr. Henri S. Beland was the guest of honour at a farewell banquet given in the Rose Room of the Windsor Hotel by the fifth year students of the University of Montreal, recently.

Dr. Frank E. Pedley, candidate for a degree in the Harvard University School of Public Health, is at present serving as an examining physician for the Laurentide Health Service. He is a graduate of McGill in Medicine, and while still an undergraduate served with distinction in hospitals overseas.

Dr. Alderic Lesage, a prominent physician at Pointe Claire, P.Q., where he has resided for the past twenty-seven years, died recently after a long illness. He had served as Mayor of the city for the term of two years, and for many years had acted as President of the local board of School Examiners.

Dr. Mary Runnells Bird, a graduate of Bishops College, and holding an *adeundum* degree from McGill University has returned to Montreal, where she intends to practice. She did good work in England during the four years of the War and more recently acted as Director of Maternity and Child Welfare in the city of Derby,

Dr. Wilfred Lord, of Granby, sailed recently on the S.S. *Empress of Britain*, and purposes to spend a year in Paris, devoting special attention to the study of electrical treatment and surgery.

Dr. Harwood, dean of the Faculty of Medicine of the University of Montreal, and the dean of the Faculty of Medicine of the University of Laval, have been appointed delegates to represent the Governments of Quebec and Ottawa as well as their respective Universitites at the convention at Strasbourg, the end of June.

THE *Montreal Dispensary* held its 73rd Annual Meeting recently, at its rooms on St. Antoine Street. During the year ending April 30th, 1923, the dispensary has treated 11,000 sick patients unable to pay for medical attention. Efforts are now being made to employ a regular social service worker to look after the family welfare of some of the more needy of the patients.

THE *epidemic of typhoid fever in Mansonville, P.Q.* is definitely on the decline. Most of the cases who are being treated at their own homes, are now in the convalescent stage, and those who are in hospital are reported by the physicians in attendance as well on the road to recovery. The town's sanitation system has been carefully examined, and many improvements will be made, following instructions from the Provincial Board of Health.

THE Provincial Government is making arrangements to take over from the Federal Government the *control of the Ste. Agathe Sanatorium* and details concerning the transfer were discussed recently by the representatives of the two administrations. At present, the institute is occupied by invalided soldiers, and it is announced that the province will not definitely take over the hospital until the present inmates have left.

Dr. Herbert William Turney, examining physician for the Laurentide Health Service, died February 21st, at Grand'Mere, P.Q. Death was due to heart failure following a severe attack of pneumonia. Dr. Turney was born in Ontario, graduated in Arts from the University of Toronto in 1914 and in 1917 obtained his doctorate in medicine from McGill. He served for two years as resident *interne* at the Royal Victoria Hospital in Montreal, and then took up work with a Life Extension Institute in New York. Shortly afterwards, he accepted a position in connection with their work in Grand'Mere. In 1920, he married Miss Muriel Black, of St. Johns. His wife and young daughter, as well as both his parents and a brother, survive Dr. Turney.

Dr. E. N. Chevalier, of Iberville, who graduated in 1873, celebrated his fiftieth anniversary in the practice of medicine last March. During his long and successful practice he has made many friends. For many years he has been coroner of the district. Some years ago he was made a Surgeon Major in the Canadian Army Medical Corps, and acted as the Medical Officer in charge of the barracks when the Royal Canadian Rifles were stationed there, and was deservedly popular with both officers and men. He is still in practice and is at present connected with the St. Johns General Hospital.

ONTARIO

PRESENTATION TO DR. McCULLOUGH, CHIEF OFFICER OF HEALTH FOR THE PROVINCE OF ONTARIO

AN address of appreciation to Dr. McCullough by members of the Provincial Board of Health took place on April 23rd, 1923, in which they emphasized with pride the rapid strides which had been made in public health work in the province during his long tenure of office. Many of the most healthful enactments in public health legislation had been placed on the statute book either on his personal advice or as the result of research work carried out under his direction.

They desired to recognize that the unparalleled success which had attended the efforts of the Board throughout the province had been made possible owing to the support afforded by Dr. McCullough. The excellent results attained in the control of communicable diseases particularly in relation to typhoid fever, diphtheria, small-pox and venereal disease are worthy of the highest possible commendation. Along with this very complimentary address his *confreres* presented him with a handsome English club bag as a token of their affection and esteem, and expressed the hope that he might long be spared to continue the work which had been of such service to the community.

The address was signed by the following: A. H. WRIGHT, JAMES ROBERTS, T. E. KAISER, W. H. HOWEY, H. R. CASGRAIN, A. S. McELROY.

MEDICAL LEGISLATION

The Legislative Assembly of the Province of Ontario passed the third reading of the Medical Bill on Friday, May 4th, 1923. Although the Bill, which is herewith appended, does not compel the present irregulars in the province to cease practising, it does aim to accomplish three great things, namely, (1) defining the "Practice of Medicine"; (2) demanding that, in the future, all who desire to practice in this province must be educated; (3) placing prosecutions where they belong, namely, in the hands of the County Crown Attorneys. There is much cause for gratification on the part of the medical profession of the province.

MEDICAL BILL

An Act to amend the Ontario Medical Act

His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:

1.—This Act may be cited as The Medical Act, 1923.

2.—The Ontario Medical Act is amended by adding thereto the following sections:

47*a*.—Every person shall be deemed to practice medicine within the meaning of this Act who holds himself out as being able to diagnose, treat, operate or prescribe for any human disease, pain, injury, disability or physical condition or who shall either offer or undertake by any means or method to diagnose, treat, operate or prescribe for any human disease, pain, injury, disability or physical condition.

47*b*.—Nothing in this Act contained shall apply to or affect:

(a) any commissioned medical officer serving in the army, navy, or marine hospital service;

(b) any lawfully qualified physician in any other province or country meeting a legally qualified medical practitioner in Ontario in consultation;

(c) any person actually serving without professional fees on the resident medical staff of any legally incorporated hospital in Ontario;

(d) the furnishing of first-aid or temporary assistance in cases of emergency;

(e) the domestic administration of family remedies;

(f) persons treating human ailments by prayer or spiritual means as an enjoyment or exercise of religious freedom;

(g) the practice of chiropody;

47*c*.—Nothing in this Act shall apply to or affect:

(a) the practice of dentistry by a dentist duly licensed under *The Dentistry Act* to practise dentistry in Ontario;

(b) any person who manufactures or mechanically fits or sells artificial limbs or other appliances:

XUM

(c) the practice of optometry by an optometrist duly licensed under *The Optometry Act* to practise optometry in Ontario.

47*d*.—(1) A person not being a legally qualified medical practitioner who was on the 1st day of January, 1923, practising in Ontario as an osteopath, chiropractor, or drugless healer and who within sixty days after the coming into force of this section files in the office of the Provincial Secretary a statement in the form to be furnished by the Provincial Secretary, stating; (a) his name in full; (b) his place of residence; (c) his degree or certificate of qualification or other document under which he claims to be qualified to practice; (d) evidence as to his character and good behaviour, and (f) the particular method which he is practising, shall not incur any penalty under this Act for the practice of medicine under this Act so long as he continues to practice according to the method named by him in such statement.

(2) There shall be kept in the Department of the Provincial Secretary a list of all persons who have filed statements as required by subsection 1, classified according to the several methods of practice named by them.

47*e*.—The Lieutenant-Governor in Council may make regulations providing for the admission to the practice of medicine of persons professing any system of healing and prescribing the qualifications to be required of such persons.

3.—Subsection 2 of section 58 of *The Ontario Medical Act* is repealed and the following substituted therefor:

(2) Every prosecution under this Act shall be undertaken and conducted by the Crown Attorney of the county or district in which the alleged offence was committed, whose duty it shall be to see to the enforcement of the provisions of this Act.

4.—This Act shall come into force and take effect on the 1st day of July, 1923.

INSULIN

In response to a request from the Medical Faculty of the University of Toronto, the Ontario Medical Association circularized the entire medical profession in the province, stating that two day clinics would be held at the Toronto General Hospital for the convenience of practitioners who desired to make an intimate study of the use of insulin, and the concomitant treatment for diabetes mellitus. Over 600 applications for attendance at the clinics have been received. Eighty of these have already attended and it is hoped by the Medical Faculty to complete the clinics during the early part of the summer. Reports from physicians who have attended speak very enthusiastically of the work.

Mr. H. M. Lancaster, B.A.Sc., Director of Laboratories in the Provincial Board of Health, was honoured on May 14th by the presentation on behalf of the staff with a beautiful reading lamp. Mr. Lancaster is taking charge of the Division of Food and Drugs of the Federal Department of Health, Ottawa, and leaves the Board after twelve years' service and with the best wishes of the Board and staff. Dr. Charles M. Anderson, C.P.H., the former Provincial Bacteriologist, has been appointed to succeed Mr. Lancaster as Director of Laboratories.

Because of local conditions requiring a renewed stimulus of interest in the Sick Children's Hospital, recently opened in London, Sir Robert Jones, distinguished visitor to the Canadian Medical Association, has very kindly consented to come to London and inspect the hospital, conduct a clinic and otherwise assist the furtherance of the project of the care of sick and crippled children of Western Ontario. The day of the meeting is tentatively fixed as June 14th.

The Western Ontario Academy of Medicine held its final general session for the term of 1922-23 on May 25th, with a considerable attendance of doctors from Western Ontario points. The programme was furnished by Dr. Wm. Goldie, of Toronto, speaking on the subject of Hypertension; Dr. Hugh Cabot, of Ann Arbour, Michigan, delivering an address on the management of small Urenal and Urethral Calculi, illustrated by lantern and X-ray pictures; Dr. Thos. Morgan, of New York, contributed the third number as the exposition of the anatomy of the pelvic floor in relation to Gynaecology and Obstetrics, also showing, by means of a moving picture, the technique of an operation for Perineorrhaphy.

BRITISH COLUMBIA

VICTORIA MEDICAL ASSOCIATION

Dr. J. W. Warren, of Calgary, has been appointed Director of the Department of Radiology at the Provincial Royal Jubilee Hospital, Victoria, B.C. Dr. Warren will take over his new post on May 15th. Since 1919, Dr. Warren has been Radiologist to Calgary General Hospital and leaves that institution to move to Victoria. He was born in Perth, Ontario, in 1882. He graduated from Queen's University in 1905, and was for eleven years engaged in general practice in North Dakota. Since then he has been engaged in Radiology. In 1916, Dr. Warren left with the C.A.M.C. to serve with Canada's overseas forces, and working under Major Pirie at Moore Barracks Hospital, Shorncliffe. From 1917 to 1919 he served as Radiologist at No. 7 Canadian General Hospital at Etaples. After returning to Canada, Dr. Warren became Radiologist at College Street Military Hospital,in Toronto, until he was demobilized in September, 1919, when he moved to Calgary General Hospital.

VANCOUVER MEDICAL ASSOCIATION

The Twenty-Fourth Annual Meeting of the Association was held in the Board of Trade Rooms, Vancouver, on the 17th of April. Dr. F. J. Buller was elected President for the ensuing year, Dr. H. H. Milburn, Vice-President, and Dr. J. A. Sutherland was elected Secretary. Dr. Stanley Paulin was re-elected Treasurer.

The various Standing Committees of the Association presented their reports showing a successful year's work. Dr. Pearson, Chairman of the Summer School of the Association announced the plans for the Session which will be held this year from July 3rd to 6th inclusive. The Lecturers will be, Dr. H. A. Christian, of Harvard University Medical School, Dr. Andrew Hunter, Professor of Biochemistry, Toronto University and Dr. Carl B. Davis, of Chicago. Four addresses will be given by each Lecturer, and a large attendance is expected. The Committee appointed to enquire into the feasibility of establishing a Medical Service Bureau along lines similar to those established in other large medical centres reported satisfactory progress.

The Association is standing solidly behind the British Columbia Medical Association in its efforts to improve the conditions of contract practice in the province, and has every confidence that the fight now being fought with the Railway Organizations will be brought to a successful conclusion.

At the April meeting of the Victoria Medical Society, Dr. Alison Cumming, of Vancouver, read a paper on "Diabetes," and told of the Insulin treatment carried out in that city.

XUM

Dr. R. E. McKechnie, of Vancouver, read a paper at the May meeting of the Victoria Medical Society on "Some Aspects of Bladder Surgery."

Dr. H. A. Whillans, who has been in general practice in Victoria, B.C., for several years, has moved to Stewart, B.C.

Dr. A. L. Jones, late of Victoria, B.C., is now in Revelstoke, B.C., engaged in general practice.

Dr. H. B. Rogers has moved from Victoria to Chemainus, B.C., where he is engaged in general practice.

The Annual General Meeting of the Okanagan No. 4 District Medical Society will be held at Penticton, on June 1st, 1923. A record attendance is expected.

The Executive Secretary of the British Columbia Medical Association recently visited Vancouver Island, and had a personal interview with practically every medical man. Their interest in the activities of the Association, their appreciation of the efforts of its committees to improve economic conditions and particularly of the solidarity of the profession speaks well for the future of the Association.

Dr. C. H. Vrooman has resigned his position as physician in charge of the Rotary Clinic for Diseases of the Chest, of Vancouver. His resignation is due to a very definite change in the policy of the Clinic inasmuch as formerly only indigent or such other cases as were referred in consultation by medical men were examined and treated, now it is the intention to make the clinic free for everyone in the fullest acceptation of the term. This occasions a full time medical officer who will not undertake any private practice. In the opinion of a number of medical men it is not a desirable change, as the clinic will be exploited by people who are quite able to employ a physician privately. As Dr. Vrooman disapproves of this policy he has been compelled to sever his connection with the clinic and will devote himself to private practice. He will remain in charge, however until his successor is appointed.

Dr. Edward S. Hasell, who has been Medical Superintendent of the Provincial Royal Jubilee Hospital, Victoria, B.C., for twenty-six years died on March 13th, 1923, in his 64th year. He was one of the senior members of the profession in Victoria, having begun practice thirty-five years ago. He was a member of the British Columbia Medical Association and an active member of the Victoria Medical Society. Dr. Hasell was highly esteemed by his fellow members and occupied a prominent place in the community. He was born in India in 1859. He received his early schooling at Harrow and graduated from King's College Hospital, London. Apart from his interest in medicine there was perhaps no subject which held Dr. Hasell's attention so closely as Art: his private collection of water-colours, engravings and books of Art is undoubtedly one of the finest in the Western Province: The Island Arts and Crafts Society owes its existence to him and to the interest which he always took in its meetings. He was its president during the greater part of that time. He was also largely responsible for the founding, in 1889, of the Natural History Society of Victoria.

During the last few months the British Columbia Medical Association Executive and Industrial Service Committee have had a strenuous time dealing with the Railway Medical Contracts dispute. It is perhaps difficult for other provinces to realize how pernicious this contract practice is in British Columbia. Railway employees have for years been receiving medical services obtained at the expense of the doctors which would not have been tolerated elsewhere. In asking the C.P.R. Employees' Association for an amelioration of the working conditions by the elimination from contracts of all the medical and surgical work on families and dependents of employees, and requesting that same be paid for on the principle of "payment for services rendered" at a preferred rate comparable with the W.C.B. scale of fees (provided payment is guaranteed by the Railway Association) the profession does not think it is asking for anything unreasonable. Several conferences with the C.P.R. Employees' Committee have, unfortunately, proved abortive; they appear to be adamant in claiming "their pound of flesh" and have resolutely declined the British Columbia Medical Association's offer to submit the whole question to an impartial arbitration board and abide by its decision. In view of the unreasonableness of the C.P.R. Employees' Association in handling this controversy, the Executive of the British Columbia Medical Association has decided to lay the whole facts before President Beatty with a request that the matter be investigated, as it is felt that the C.P. Ry, as a company, would not countenance such exploitation of the medical profession in this province were they cognizant of the whole facts.

EVERY DAY AND EVERY WAY

Oh Mr. Coué comes from France and from the town of Nancy,
His "every day and every way" caught many persons' fancy.
His views were put into a book, 'tis found in many places,
"Imagination rules the will"—its keynote and its basis.

If fever or a broken bone, or ills that end in -itis,
A toothache, or a haemorrhoid, a wheezy old bronchitis,
If any such should rack your flesh, till you are nigh distracted,
Then try the "every day and way" that formula didactic.

What need for ointments or for pills, for this or that fine potion?
Away with salts! confound your squills! no more of any lotion!
And why seek constipation's cure, by lengths of bowel resected?
When all may learn the "day and way" a lesson resurrected.

And when the wife in labour pains, for nurse and doctor hollers,
We'll soothe her mind in Coué's way and save so many dollars,
He'll be quite pleased to learn about such faithful loyalties,
But better far to hear about increasing royalties.

The views which Coué has advanced are found in many pages,
From Charcot back to Plato's time, and in the Middle Ages,
That well they knew the mind of man can be now predicated,
But then their views did not bring cash, nor were they syndicated.

E. J. MULLALLY

Obituary

Dr. John Wallace Scane. It is with much regret that we have to announce as we go to press, the death on the morning of May 20th, in his fifty-fourth year, of Dr. John Wallace Scane, Secretary-Treasurer of our Association. There are few in the profession to whom his death will not bring a sense of deep personal loss. His personal attractions were many. Those who did not wish him well must have been very few. He has acted as our Secretary-Treasurer for the last eight years and to him the success of our Annual Meetings has been largely owing. We must defer to our next issue a full statement of his many activities, not only in connection with university teaching, but also on behalf of the profession generally. His memory will linger long, both among students and confreres, as an earnest and successful teacher and a true and very congenial friend.

Dr. G. I. Campbell of Grand Valley, died in Fergus Hospital, on April 25th. A graduate of the University of Toronto Medical Faculty in 1897, he had practised in Grand Valley for twenty-five years.

Dr. Harold W. Street of Owen Sound, a graduate of Toronto University Faculty of Medicine in 1918, died in Constantinople from typhus fever in April of this year.

Dr. F. McLaughlin died in Morrisburg on April 18th, where he had practised since 1890. Dr. McLaughlin was a graduate in medicine of Queen's University Medical Faculty in 1886, and after practising in Harrowsmith had moved to Morrisburg.

Dr. George Shannon died in St. Thomas on April 22nd. A graduate of the University of Toronto Medical School in 1890, he first practiced in Sparta, coming later to St. Thomas, where he had lived for fifteen years. Dr. Shannon was at one time president of the St. Thomas Medical Association, and had been one of the city's most prominent general practitioners.

The death of **Dr. J. A. LeBlanc,** aged 69, a well known Montreal physician, occurred at his home, 401 Demontigny Street East, after a short illness. He began the practice of medicine forty-seven years ago, and up to the time of his decease was the physician of several of the religious institutions in the city.

Dr. J. A. Stewart of Montreal, died at Kingston on April 18th. Dr. Stewart had been on the staff of St. Anne de Bellevue Hospital for some years after having served for four years overseas. He was a graduate of Queen's University Medical Faculty.

Dr. Edward Featherstone of Prescott, died in Brockville on April 22nd. Dr. Featherstone was a graduate of Trinity University Medical Faculty in the year 1895, and had an extensive practice in Prescott and the neighbourhood.

Dr. Adam Thompson died in Galt on April 19th. Dr. Thompson had been well known both in medical and political circles, and had practiced in Galt for many years. Dr. Thompson was a graduate of Trinity Medical College in 1887, and Licentiate of the College of Physicians and Surgeons of Ontario, in the same year.

Dr. R. H. MacAulay, passed away at his late residence, Queen Street, Guelph, on April 27th, after a protracted illness. The late Dr. MacAulay was born in the city of Montreal, in 1861, and was the second son of the late Robertson MacAulay, president of the Sun Life Assurance Company, Montreal. Following his early education and subsequent graduation as a medical practitioner, he went to the east as medical examiner for the company in 1897, and remained there for a number of years. On his return he took up his residence in Guelph, where he has since resided. During his residence in Guelph he has taken an active interest in everything that pertained to the interest of his fellow citizens and was a generous supporter of all charitable objects.

Dr. John R. Stone died in the General Hospital at Parry Sound, on April 26th, after a long illness. One of the best known and most progressive of Ontario physicians, Dr. Stone was well known in Parry Sound district where he had practised for many years. For the past thirty years he had taken a leading part in the developing of the General Hospital in Parry Sound, and the efficiency of this institution was largely due to his active interest. An M.B. of the University of Toronto Medical School in 1889, he soon became well known as a surgeon, though never confining himself to the practice of medicine alone. Dr. Stone had been a member of the town council, chairman of the finance committee, and an active worker in Liberal politics. As an able medical adviser and as a real philanthropist, Dr. Stone had always occupied a position of great prominence and his death means a great loss to the community at large.

Book Reviews

Heliotherapy By A. Rollier, M.D. Oxford Medical Publications, Henry Frowde, Hodder and Stoughton.

Heliotherapy is attracting attention from other than medical reviewers; in the London Times Weekly Edition for April 5th, 1923, and in the Literary Supplement of the same issue, there are reviews of the good results obtained in the treatment of surgical tuberculosis by sunlight in Dr. Rollier's clinic at Leysin, in the Alps.

This clinic was established in 1903, and the twenty years which have elapsed since then have more than justified the hopes which actuated the employment of sunlight in the treatment of a condition which has not been benefitted to any great extent by surgical measures. Those of us who have been practising medicine for a decade or more, have not been impressed with the numerous operative procedures, the splints, the fixations, the numerous dressings seen in the treatment of patients with surgical tuberculosis in city hospitals; the results in too many cases have been such as to swell the mortality statistics. Dr. Rollier's results during the past twenty years, in his clinic, in an Alpine village in Switzerland, where the deeply-tanned children are kept out of doors, devoid of clothing, playing games or lying about in the sunlight, are in cheering contrast to those obtained in the average industrially-centred hospital in which the sick children are confined to beds in various forms of fixation apparatus.

Heliotherapy, to use the words of the medical cor-

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respondent writing in the *Times*, "is no mere system of casual sun baths; it is an exact science which has been built up with infinite care and resource. It demands for its practice, knowledge, experience, and patience." The connection between pigmentation of the skin and successful therapy, not only in tuberculosis but in other conditions as well, is one of the interesting observations recorded by Dr. Rollier; in his clinic the exposures are gradual and when, instead of the looked-for stimulation and exhilaration which usually follow a treatment, there is headache and giddiness, the technique of the exposure demands investigation.

As is well known, sunlight treatment has been followed by the employment of artificial light from various types of so-called healing lamps; on this continent the results obtained from this form of therapy at the Saranac Lake clinics have proved very valuable in tuberculosis of the intestine and bones. If sunlight has been employed with distinct benefit both in Switzerland and in Saranac in the treatment of tubercular lesions, there is no reason why it should not be employed elsewhere; old Sol is quite partial to Canada in the distribution of his beneficent rays; in Rollier's clinic it was found that the best results followed from sunbaths given when the air is cool, between 6 a.m. and 9 a.m.; it is not heat that is desired but light, a further encouragement for Canadian practitioners to make use of this natural remedy.

It is not a complimentary commentary upon our present much vaunted civilization and science, that sunlight treatment of diseased conditions—a treatment which must be as old as the human race—should be so little employed nowadays as a therapeutic measure, that encouraging reports from clinics where it has been used are considered as marking an advance in the treatment of disease. E. J. M.

Diseases of the Stomach and upper Alimentary Tract By Anthony Bassler, M.D., F.A.C.P. Fifth edition, revised and enlarged. 8vo., pp. 899. 151 halftone and line text engravings and 93 full-page plates, with 164 figures, plain and in colours, from original photographs and drawings. Price, $8.00. F. A. Davis Company, Philadelphia.

With five editions since 1910, Bassler's work would appear to have made a place for itself as a guide to diagnosis and treatment of disorders and malformations of the oesophagus and stomach. There is a short chapter on diseases of the mouth, but principally in relation to digestive disturbances. Disorders of the salivary secretion receive due attention. The recent advances made in the study of gastric juice, gastric motility and sensation have found a place in this new edition, and much more space is given to X-ray studies. The plates illustrating this method of diagnosis are excellent and should serve to acquaint the physician with the value of roentgenological investigations. The portion of the work devoted to physical methods of treatment is commendable. There is a splendid chapter on indications for surgery. Fifty pages are devoted to splanchnoptosis, a chapter which is worthy of special mention. Laboratory methods of diagnosis described are made more clear by the judicious use of drawings, photographs and coloured plates. The revision has brought the work up to date, making it a valuable text on its special subject. J. H. E.

Abstracts of Current Venereal Disease Literature. Issued by authority of Department of Health, Ottawa.

These abstracts are issued regularly by the Department of Health, Ottawa, and deal with the current literature on venereal disease and its problems; distributed gratuitously to Canadian physicians, they serve a most useful purpose, in stimulating interest in and promoting wider knowledge in those subjects.

A recent special number of this series is devoted to a consideration of the treatment of the syphilitic pregnant woman during her pregnancy. This number is intended for distribution to physicians, hospitals, nurses, and women's organizations, and is designed to be intelligible to the lay reader. Stress is laid upon Dr. Whitridge Williams' studies of 4,547 pregnant women, whose blood had been tested for syphilis during pregnancy, which showed that this disease was the most important single factor in the causation of the death of the child. The results of treatment in preventing child mortality, and in producing healthy children are most satisfactory. The earlier in the pregnancy that ante-natal treatment is commenced, the better the results. Treatment should be intensive, and is followed by no consequences other than good.

Sequira, of Glasgow, recommends, among other points, that the husband and every child of an infected woman should be examined and similarly the parents and every member of the family of a child suffering from congenital syphilis. This is an important duty of the social service workers and those in charge of maternity, pre-natal and venereal clinics. The value of the abstracts might be enhanced to scientific readers, were the references to the publications of the abstracted articles definitely stated.

The abstracts are of great educational value, and of definite service to the community; they should be extensively read. F. S. P.

Blessures et Maladies de Guerre—Diagnostic, Traitement et Expertise des Sequelles Oto-Rhino Laryngologiques. By Dr. Jean Guisez. Paris, J. B. Bailliere & Fils. 1921.

In this small book of some 222 pages the author gives his personal experiences of injuries of the ear, nose, and throat. These are, of course, war injuries, but a large number of them are also liable to occur in industrial areas. Quite a large portion of the book is devoted to plastic repair of the injuries of the face and neck. There is detailed information *re* fitness for military service and estimation of the amount of disability caused by the various injuries. These sections have considerable value for judging the amount of compensation in industrial cases. The book, like many other French text books, is well and clearly written, but does not bring out any new facts. It forms a useful compendium of the specialty as applied to war. J. K. M. D.

Books Received

Merck's Manual of the Materia Medica. Fifth edition. Published by Merch & Co., 45 Park Place, New York, 1923.

Medical History of the Great War, Medical Services, Hygiene of the War—Volumes I and II. Edited by Major Gen. Sir W. G. MacPherson, K.C.M.G., C.B., LL.D.; Colonel Sir W. H. Horrocks, K.C.M.G., C.B., and Major General W. W. O. Beveridge, C.B., C.B.E., D.S.O., K.H.P.

Mistakes and Accidents of Surgery. By Harold Burrows, C.B.E., M.B., B.S., F.R.C.S. 464 pages. Price, 10s. 6d. Published by McClelland & Stewart, Ltd., 215 Victoria Street, Toronto, 1923.

The Emory Medical Review. Wesley Memorial Hospital Number. Vol. 2, No. 1. Published quarterly by the Faculty of the Medical School of Emory University. Subscription, $1.00 per annum.

XUM

CHEMOTHERAPY OF SYPHILIS

1° — ARSENICAL CHEMOTHERAPY:

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INDICATION: To be used where an intensive treatment is desirable, in intravenous injections.
DOSAGES: In cartons each containing one sealed glass ampule of 0.15, 0.30, 0.45, 0.60, 0.75, 0.90 grammes.
Also in outfit containing 12 ampules of 0.15 grammes each together with 12 ampules of Solution Stovaine 1% for subcutaneous use.

EPARSENO (Dr POMARET'S preparation "132").

A solution, stable and sterilized, of Amino-Arseno-Phenol the basis of 606 and containing 40% of Arsenic.
INDICATION: Used for the treatment of syphilis by intramuscular injection.
DOSAGES: in boxes of 5 ampules of 1. c. c., each one containing 0.125 grammes of Amino-Arseno-Phenol; this latter is the equivalent of 0.25 grammes of Novarsenobenzol Billon. Also in boxes of 5 ampules of 1 c. c., each one containing .05 centigrammes of Amino-Arseno-Phenole; specially adapted for the treatment of children.

2° — BISMUTH CHEMOTHERAPY:

LUATOL "A"

An aqueous, glucose and neutralized solution of Tartro-Bismuthate of Sodium and Potassium.

LUATOL "B"

An oil suspension of Tartro-Bismuthate of Sodium and Potassium.
INDICATION: Bismuth salts have a therapeutic efficiency proven by the rapid disappearance of the treponema from the lesions; specially in those cases which have become arseno or mercuro resistant.
DOSAGES: **LUATOL "A"**—in boxes of 10 ampules of 1 c. c. containing in solution 0.10 grammes per c. c. of tartro-bismuthate of Sodium and Potassium for intramuscular injections.
LUATOL "B" — in boxes of 12 ampules of 4 c. c. containing in oil suspension 0.10 grammes per c. c. of tartro-bismuthate of Sodium and Potassium for intramuscular injections.

RUBYL

An oil suspension of Iodide of Quinine and Bismuth in ampules of 3 c. c.
INDICATION: Iodide of Quinine and Bismuth is one of the best tolerated and most active of the insoluble bismuth salts, having a remarkable action in syphilis of the nervous system.
DOSAGES: Boxes of 12 ampules of 3 c. c. containing 0.10 grammes of active product per c. c.

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A Text Book of the Surgical Dyspepsias By A. J. Walton, M.D., M.B., B.Sc., F.R.C.S. 728 pages, illustrated. Price, 12s. net. Published by Edward Arnold & Co., London, W., 1923.

Nursery Guide for Mothers and Nurses. By Louis W. Sauer, M.A., M.D. 188 pages, illustrated. Price, $1.75. Published by C. V. Mosby Company, St. Louis, U.S.A., 1923.

A Monograph on Gonorrhoea. By A. Reith Fraser, M.D. 503 pages with 56 illustrations and 49 plates. Price, 18s. net. Published by Henry Kimpton, 263 High Holborn, London, W.C., 1923.

The Form and Functions of the Central Nervous System. By Frederick Tilney, M.D., Ph.D. and Henry Alsop Riley, A.M., M.D with foreword by George S. Huntington, Sc.D., M.D. Second edition, 1019 pages, 591 figures, containing 763 illustrations of which 56 are coloured. Price, $12.00. Published by Paul B. Hoeber, New York, 1923.

Environment and Resistance in Tuberculosis By Allen K. Krause, A.M., M.D. A presentation of the nature of environment and resistance and their relation to the pathology, diagnosis, symptoms, and treatment of tuberculosis. 137 pages. Price, $1.60. Published by Williams & Wilkins Company, Baltimore, Md., 1923.

Management of the Female Urinary Bladder After Operation and During Pregnancy.—A study devoted to postoperative care of the urinary bladder, with especial consideration of the part played by residual urine, has been made by Arthur H. Curtis, Chicago, throughout the period of convalescence of 1,595 female patients subjected to serious operations. Use of the catheter has been avoided when possible, but no patient has been allowed to suffer from distention. Residual urine has been present after the return of spontaneous micturition in more than 64 per cent. of all repeatedly catheterized patients The most important principle in our treatment of such cases has been the daily passage of a catheter, immediately after urination, until residual urine is no longer present. Only three of those who were catheterized daily until the return of normal function developed urinary tract infection. These three subsequently showed residual urine after they were thought to have returned to normal, and it is believed that lack of treatment during this time accounts for the infection. Laboratory study of urine from patients subjected to postoperative catheterization reveals that there may be temporary cystitis. This invariably—and usually very promptly—disappears if freedom from residual urine is maintained. Instillation of $\frac{1}{8}$ per cent. silver nitrate and administration of urinary antiseptics by mouth are helpful adjuncts in the treatment. Strict avoidance of the use of the catheter after all operations, despite distress, would perhaps reveal equal freedom from infection; but this plan cannot be followed without much suffering to many patients. Moreover, animal experimentation indicates that if bladders are allowed to distend and overflow, considerable back-pressure destruction of kidney tissue results. Clinical evidence indicates that residual urine occurs very often in pregnant women. The notable frequency with which it is present in those with pyelitis of pregnancy suggests that ascending infection from this source is of considerable importance.—*Jour. Am. Med. Assoc.*, April 21, 1923.

Prophylactic Injections in Measles.—Debre and Ravina (*Bull. Soc. Méd.*, Paris, February 15th, 1923) give their experiences in the use of serum taken from measles convalescents, as a prophylactic. The serum is tested by the Wassermann reaction before use. From $2\frac{1}{2}$ to 3 c.cm. of the serum are injected intramuscularly. Children who have been exposed to measles but showed no signs themselves were vaccinated with the serum, and weakly children who were in danger of being exposed were also vaccinated, and attention was paid to certain crèches. The vaccination was particularly successful in preventing outbreaks of measles in the hospital. If a child suffering from measles was admitted by mistake, all the other children were immediately vaccinated, and by this means the authors say they have been able to escape outbreaks of measles. It does not appear that the immunity secured by this vaccination lasts long. In some cases after vaccination a modified benign form of measles occurred, characterized by very slight catarrhal symptoms, no Koplik spots, slight fever, and moderate rash. To bring about this modified measles the authors recommend injecting infected children (that is, children incubating for measles) about the seventh to the tenth day of the incubation period.—*Brit. Med. Jour.*, April 14, 1923.